A leading provider of advanced technology-based security solutions

Spectra Systems Corporation
Annual report and accounts 2017

Spectra Systems Corporation is an established world leader in providing security technology, from banknotes and products to electronic gaming.

Spectra provides integrated solutions comprised of engineered materials for authentication and hardware and software systems which verify the unique signatures of the authentication materials.

WE OPERATE IN 35 COUNTRIES

WE HAVE 28 STAFF IN OUR OFFICES

FOUR ACQUISITIONS SINCE 2012

OVER 65 CUSTOMERS

Financial highlights

- Revenue up 9% for the year at US$12,170k (2016: US$11,122k)
- Adjusted EBITDA[1] up 83% at US$4,349k (2016: US$2,383k)
- Adjusted PBTA[1] doubled to US$4,010k (2016: US$1,999k)
- Adjusted earnings[2] per share of US$8.8 cents (2016: US$4.4 cents)
- Cash generated from operations of US$4,669 (2016: US$2,805k)
- Strong, debt-free balance sheet, with cash[3] of US$11,181k (2016: US$8,808k)
- Declaring annual dividend up 20% to US$6.0 cents per share to be paid in June

1 Before stock compensation expense and exceptional items related to inventory write downs and acquisition costs.

2 Before amortization, stock compensation expense and exceptional items related to inventory write downs and acquisition costs.

3 Does not include US$1,099k (2016: US$1,092k) of restricted cash and investments.

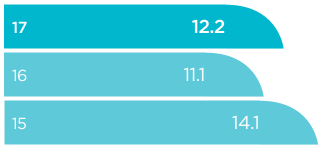
Operational highlights

- In-house production throughout 2017 with margin uplift through consumption of inventory previously manufactured through contract services
- Record phosphor sales of US$4,313k (2016: US$3,764k)
- Gross margin increased to 71% from 68% resulting from in-house manufacturing of covert materials, royalties and record high-margin phosphor sales
- Reduced operating expenses by US$881k through a planned reduction of R&D and reallocation of internal resources to in-house manufacturing
- Brand authentication and Secure Transactions Group performing in line with expectations
- Completed engineering staff reductions and facility consolidation, which will allow us to redirect resources to increase manufacturing capacity in 2018 to support new larger orders and mitigate performance risk

Revenue
(US$ million)

12.2

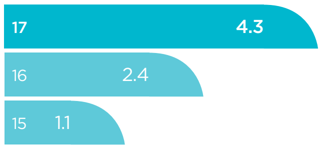
(2016: 11.1)



Adjusted EBITDA
(US$ million)

4.3

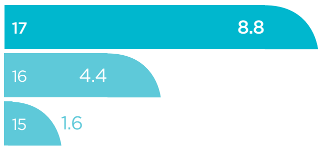
(2016: 2.4)



Adjusted earnings
per share (US$)

8.8¢

(2016: 4.4¢)



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www.spsy.com

Our strategy
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Spectra at a glance

Spectra is a highly responsive organization that develops customized solutions for its customers.

Our solutions

Authentication systems

Spectra's sophisticated capabilities allow us to invent, develop and manufacture integrated solutions comprised of a system of taggant materials and sensor equipment to authenticate banknotes at high processing speeds and brand products in the field.

Our solutions are used by:

- two G7 central banks;
- 17 other central banks for currency authentication; and
- a major G7 country for passport security.

Secure transactions

Spectra's Secure Transactions Group is the leading supplier of real-time fraud control and risk management systems to government-sanctioned gaming operators. Currently deployed in North America, Europe and Asia, our integrity systems monitor and audit more than US$20 billion in annual sales for online, internet and mobile phone-based lotteries and pari-mutuel organizations.

Our products have been engineered to provide:

- fully automated independent real-time monitoring; and
- compatibility with all gaming systems.

Our customers

Our end customers include a G7 central bank organization and one of the world's largest commercial security printers and papermakers, which supplies the Company's technology to a second G7 central bank and numerous other central banks. Additionally, brand authentication customers use our products including several consumer goods brands, while our Secure Transactions Group provides solutions for 19 lotteries, 17 in the United States of America and two international.

Our solutions are used by:

- 19 central banks including two G7 central banks;
- commercial security printers and papermakers;
- Crane & Co.;
- suppliers of security threads for world currencies;
- LMI Packaging Solutions;
- multi-national consumer product companies;
- Governments of Turkey, India, Malaysia and Norway;
- Intralot SA;
- Scientific Games International Inc.;
- International Game Technology PLC;
- lotteries in 17 states within the United States of America; and
- national lotteries in two countries.

We have integrated our TruBrand™ cloud-based authentication services into the Secure Transactions Group to create an important new growth channel as smartphone authentication technology gains traction.

Smartphone authentication of product brands

TruBrand™ and TruNote™

Spectra's new technology enables end users to verify products and banknotes with a smartphone. This technology eliminates the need for costly readers and allows the consumer to authenticate the product themselves.

- TruBrand™ and TruNote™ are materials-based technologies that do not rely on easily counterfeited images.

Optical materials

In the course of developing our authentication solutions for over a decade, Spectra has created a large number of unique optical materials which are responsive to various forms of excitation, from light to ambient environmental conditions, including gaseous constituents. Our materials are finding new applications in process control, manufacturing and consumer products.

Our markets

Spectra's market opportunity has expanded once more with the introduction of our smartphone authentication solutions for products, tax stamps and banknotes. The ability to empower anyone with a smartphone to authenticate products and banknotes containing our materials transforms the market.

Our TruBrand™, TruStamp™ and TruNote™ suite of solutions are the only materials-based smartphone authentication technologies in the world and rely on our proprietary materials. This is a powerful combination of new and disruptive technologies introduced by one company, which, in the span of two years, has gone from concept to market-ready products for sale and under test by large volume tobacco suppliers in Asia.

Spectra's current suite of portable reader-based solutions can be used for authenticating and tracking consumer and tax-bearing products. Our reader-based business has grown considerably in Asia and has several recognizable brand owners as customers.

With over 150 billion banknotes manufactured annually worldwide and 85% of all transactions performed using banknotes, this business has proven to be a high quality, long-term revenue source for the Company. With 19 central bank customers and new developed technologies, particularly for polymer banknotes, we expect continued strong earnings from this sector.

Spectra's secure ICS software products have been augmented with new capabilities since the acquisitions and have resulted in revenue growth with existing customers as well as with new ones. Along with the expansion in internet-based lotteries, we expect to provide cloud-based authentication for a potentially large number of customers using our materials-based TruBrand™, TruStamp™ and TruNote™ smartphone authentication.

In addition, lawmakers in at least 20 states are crafting legislation to legalize sports gambling. Our Secure Transaction Group is poised to service these potential new markets.

Our strategy

Capitalizing on developed technologies and the power of the internet for authentication.

Our solutions

Strategic aim	Capitalize on existing suite of developed covert material products	Advanced smartphone authentication technology
Development strategy	Future development of covert materials and sensors will be externally funded Focus on polymer banknotes Additional business from existing customers	Leverage TruBrand™ smartphone technology to create new revenue streams for both materials as well as the Secure Transactions Group Focus on large, billion unit opportunities
Progress	Proposal issued for the development and supply of further upgraded sensor capability to a G7 central bank in response to a standardization requirement Proposal issued for a covert security product for a polymer banknote customer	Obtained approval for TruBrand™ materials on tobacco products sold in China Highly successful production-scale testing and consummation of our TruBrand™ taggants by a large tobacco company printer in China
Outlook	New opportunities include G7 and other central banks Penetration into the polymer banknote market through partnerships with polymer suppliers Expectation to execute a license and supply agreement for a covert security product for polymer banknotes with a major central bank within the next two years	The utilization of the Secure Transactions Group for cloud-based server authentication of TruBrand™ The sale of our smartphone technology TruNote™ for the authentication of banknotes Sales of TruBrand™ materials in 2018

ICS

Expanding its authentication of secure transactions

Our Secure Transactions Group is poised to service potential new markets for sports gambling which is on the verge of being legalized in several states. From New York to California, lawmakers in at least 20 states are wagering that sports gambling could become legal in 2018 and are crafting legislation to make that happen within their borders.

Increase high-margin specialty materials sales	Implement cost reductions
Develop and acquire specialty phosphor and taggants for authentication Develop new TruBrand™ taggants Internal development and licensing of novel phosphors Restructure staffing to focus on specialty materials	Identify areas for cost savings in both infrastructure and staff composition
Acquired specialty phosphor company in January 2016 Increased phosphor sales beyond US banknotes into Asia and Europe through partners Successfully initiated new line of business in consumer products, namely coffee cups	Restructuring of staff to reduce R&D spend Consolidated operations upon the expiration of a property lease in mid-2017 Seeking lower cost materials and services or price reductions from suppliers Gross margin increases resulting from in-house manufacturing
New sales channel for our specialty phosphor materials to a banknote security thread manufacturer Incorporation of phosphors in our smartphone products Increased opportunities with long-standing customers	The benefits of reduced staffing and leased space is expected to be realized in 2018

Chief Executive Officer's statement

Through achieving key commercial milestones, Spectra Systems has delivered an excellent performance for the 2017 financial year.

Introduction

Through achieving key commercial milestones, as described in the Review of operations below, Spectra Systems has delivered an excellent performance for the 2017 financial year.

Revenue for the year was US$12,170k (2016: US$11,122k) due to record phosphor sales and higher royalties earned. Adjusted EBITDA (before stock compensation expense and exceptional items) for the year increased 83% to US$4,349k compared to the prior year of US$2,383k. Having generated cash from operations of US$4,669k (2016: US$2,805k), cash at the period end amounted to US$11,181k (2016: US$8,808k), excluding US$1,099k of restricted cash and investments (2016: US$1,092k). This is notwithstanding US$2,270k paid to shareholders during June in the form of the Company's inaugural dividend of US$0.05 per share.

The Company therefore intends to declare an annual dividend up 20% at US$0.06 per share to be paid in June. The Company will continue to have sufficient cash resources thereafter to execute on its growth plans.

Review of operations

Authentication Systems

The Authentication Systems business, which includes the security phosphor materials, generated revenue of US$10,823k (2016: US$9,848k) and adjusted EBITDA of US$3,794k (2016: US$1,928k). Authentication Systems revenues are driven by covert material sales and royalties through our licensing agreement with a major banknote supplier and printer to 18 central banks, including one G7 central bank, and directly to another G7 central bank. We are pleased to report that we continue to sustain a margin increase from using our in-house manufacturing facility.

The strong earnings from our covert materials business has been complemented with continued strong sales of high-margin brand authentication materials and particularly phosphors related to a central bank's redesign of banknotes which was completed in 2017.

The TruBrand™ authentication business is performing on track and continues to have significant prospects in China bolstered by our highly successful large scale production test results with a major tobacco company printer in China in Q4 of 2017.

Based on our advances in 2017, we expect to execute a new direct licensing and supply agreement for a covert security product for polymer banknotes within the next two years. We expect that the translation of this new technology from a laboratory system to a finalized product will be funded under a development agreement with the central bank customer beginning in late 2018.

Secure Transactions Group

The Secure Transactions Group performed in line with management expectations, generating adjusted EBITDA of US$555k (2016: US$505k) on revenue of US$1,347k (2016: US$1,274k).

This segment of the business is producing solid revenue growth as well as increased earnings. With the introduction of the 64-bit product along with our position as the only supplier with a virtual machine capability, we are confident we will continue to attract more customers from our competitors.

The Secure Transactions Group has won a new contract with the Maryland Lottery, 3 new licences and has continued to roll out 64-bit Premier Integrity. The Secure Transaction Group will complete their ISO-27001 Certification in 2018 and continue working with organizations such as the World Lottery Association (WLA) and the North American Association of State and Provincial Lotteries (NASPL). We are confident that we will see continued growth of the business in 2018.

The Company's strategy for increasing revenue and earnings is focused on brand authentication and specialty optical materials for security applications while maintaining a robust effort to commercialize our covert security technologies.

Nabil M. Lawandy
Chief Executive Officer

Strategy

The Company's strategy for increasing revenue and earnings is focused on brand authentication and specialty optical materials for security applications while maintaining a robust effort to commercialize our covert security technologies.

The brand authentication sector offers significant short-term growth and some very large opportunities for smartphone-based technology while the covert banknote security area provides long-term, multi-decade revenues once new contracts are executed. The banknote industry continues to have a CAGR of 3.3% and is expected to reach US$11.2 billion by 2021 (Smithers Pira, 1/2017). This growth continues in the face of utopian goals of a cashless society by some central bank executives and any changes in this trend will go through a very long phase of transitions to new substrates, denomination reductions, and multifunctional security features before a decline of any significance takes place in the industry.

We have developed and introduced an impressive suite of covert authentication products which are currently under consideration by central banks and potential corporate licensing partners. These products are primarily targeted towards polymer banknotes where growth is beginning to outpace annual increases in paper banknote production. Through our close relationship with our direct G7 customer, we have become a trusted supplier of technology and have been asked to bid on several sensor upgrades, including our own sensors which are currently in use. We are confident that this will result in additional business and underpins our strategy of growing our business with existing customers in banknote security.

Licensing agreement and supply agreement

Extending the rights to the underlying technology

Spectra is delighted to announce that it has executed an exclusive, worldwide, licensing agreement for one of its existing products which is in use by 18 central banks through an existing licensee, a major supplier of banknotes worldwide.

The licensing agreement will extend the rights to the underlying technology, which has been in use since 2003, in perpetuity, and generate US$11.2 million in royalty payments over the next five years. The payments will be settled in eleven equally spaced payments.

In addition, Spectra also executed a material supply agreement with the same licensee to provide them with covert materials exclusively for a period of ten years at reduced rates relative to the current agreement.

The Board anticipates that the supply of material, which does not incorporate minimum quantities, will generate total revenue of approximately US$1.5 million – US$2.0 million over the next five years.

It is estimated, however, that the combined license and supplied material sales will generate a contribution per annum from this product through 2023 which is approximately 2.7 times that of the current agreement, based on the minimum purchase requirements in that agreement and experienced in certain recent years.

Strategy continued

Mirroring the shift towards secure materials outside of banknotes, we began a restructuring of staff to allow us to market our optical materials in related areas such as process control and consumer products.

The Secure Transactions Group continues to innovate within the lottery ICS industry, reducing cost and increasing efficiency with the introduction of Virtualized Machines. The use of VM, we expect will allow us to win contracts from our competitors by offering more value to the customer and has become an integral part of the strategy of the group.

Prospects

We are targeting five specific opportunities, two of which are relatively near-term and three of which are somewhat longer-term.

The important, near term opportunities are:

1) The initial small-scale sales of TruBrand™ materials along with cloud-based authentication services in 2018.

2) The funded commercialization of a polymer banknote technology by a major central bank.

The longer-term (two-four years) opportunities are:

3) A licensing and supply agreement for polymer-based technology developed through external funding with a major central bank.

4) The development and supply of further upgraded sensor capability to a G7 central bank in response to a standardization requirement.

5) The adoption of our Secure Transactions Group products for sports gambling which is on the verge of being legalized in several states. From New York to California, lawmakers in at least 20 states are wagering that sports gambling could become legal in 2018 and are crafting legislation to make that happen within their borders.

In addition to these specific and defined targets, we continue to pursue banknote tenders with major central banks using other covert security features we have developed as well as our TruNote™ technology. Furthermore, we have a second polymer-based technology which we believe may be of great value through a possible partnership with a polymer supplier. This is an approach we are exploring before reverting to the more traditional approach we have taken in the past where we license technology to a major banknote printer or supplier.

We are pleased that we are able to supplement our sustained and growing profitability with a number of near-term and longer-term prospects of significant scale. We are particularly delighted that the authentication business outside of banknotes is growing ahead of expectations, which provides recurring revenue to supplement our long-term banknote business with its characteristically extended sales cycles and delays.

Regulatory approval for TruBrand™ materials in China

Spectra Systems is delighted to report that approval for the use of Spectra's TruBrand™ materials on tobacco products sold in China has been granted.

The approval was issued by The Tobacco Standardization Research Center (CTSRC) in Beijing to one of Spectra System's potential customers. This potential customer had applied for the approval, and remains interested in using TruBrand™ materials on their products.

This approval of Spectra System's TruBrand™ materials should open the way for production testing and commercialization of this breakthrough smartphone technology. Assuming this approval is granted to other applicants, which the Directors believe is highly likely, then other manufacturers of tobacco products in the People's Republic of China will also be able to test and potentially commercialize the technology.

Further updates will be provided, as appropriate.

Dr. Nabil Lawandy, CEO of Spectra Systems stated: "We believe the approval by the CTSRC is a critical achievement in the commercialization process of our TruBrand™ technology for the large tobacco industry in China. The opportunity for the Company is significant with over 200 billion cigarette packages being sold annually in China."

We believe that we have a number of transformative opportunities ahead in several aspects of our business that will drive near and long-term earnings growth for the Company and its shareholders.

With the Company having a fourth year of sustainable profits and having sufficient resources to execute on its growth plans with its existing cash reserves, the Board is delighted to continue paying dividends. Its dividend policy takes account of the Group's profitability, underlying growth, and the maintenance of sufficient cash reserves. The Board therefore intends to pay an annual dividend of US$0.06 per share on or about June 29, 2018 to shareholders of record as of June 8, 2018.

We believe that we have a number of transformative opportunities ahead in several aspects of our business that will drive near and long-term earnings growth for the Company and its shareholders.

Nabil M. Lawandy
Chief Executive Officer
March 19, 2018

New opportunity in consumer products

Spectra Systems is delighted to announce a five-year agreement with LMI Packaging Solutions of Pleasant Prairie, Wisconsin to incorporate Spectra Systems authentication technology into LMI produced coffee K-cup lids.

Spectra System's coating formulation will allow coffee suppliers producing their K-cup lids at LMI Packaging Solutions to have complete functionality in the Keurig K-cup system which uses internal sensors that allow it to only work with specific material signatures printed on the K-cups. Under the agreement, Spectra Systems must supply its technology for K-Cups exclusively to LMI Packaging Solutions for the first 18 months.

Dr. Nabil Lawandy, CEO of Spectra Systems, stated: "This agreement with LMI has validated our ability to provide security products in the consumer products market where an increasing number of manufacturers are using sensors to lock their hardware with the associated consumables. Working with LMI has been one of the smoothest product developments we have had and we are confident in their ability to attract more customers to their lids that use our materials."

"We are confident that over time this new line will grow into a stable source of revenue and profit. The total global K-Cup market in which LMI is participating is already over 10 billion units per year."

Our Board of Directors has a collective responsibility to shareholders for the sustainable long-term success of the business.

BJ Penn
Non-executive Chairman

Mr. Penn was Acting Secretary of the US Navy from March to May 2009, having previously been Assistant Secretary of the US Navy (Installations and Environment) from March 2005. He was also Director, Industrial Base Assessments from October 2001 to March 2005, with responsibility for the overall health of the US defense industrial base. He commenced his career as a Naval Aviator, having received his BS from Purdue University, West Lafayette, and his MS from the George Washington University, Washington, DC. Mr. Penn has been a member of the Board since June 2010 and became Chairman of the Board on June 7, 2011.

Nabil Lawandy
President and Chief Executive Officer

Dr. Lawandy is the founder, President and Chief Executive Officer of the Company. From 1981 to 1999, Dr. Lawandy was a tenured full professor of Engineering and Physics at Brown University. He holds a BA in Physics, and an MSc and PhD in Chemistry, both from the Johns Hopkins University. He has authored over 170 reviewed scientific papers and is an inventor on over 50 US and 25 foreign issued patents. He has also received a Presidential Young Investigator Award, an Alfred P. Sloan Fellowship, a Rolex Award for Enterprise and a Samuel Slater Award for Innovation.

Donald Stanford
Non-executive Director

Mr. Stanford, who was until 2001 the Chief Technical Officer of GTECH Corporation, is an Adjunct Professor of Computer Science and Engineering at Brown University and is an instructor in the Program in Innovation, Management and Entrepreneurship (PRIME). He holds a BA in International Relations and an MS in Computer Science and Applied Mathematics, both from Brown University. Over 30 years, he has held every technical leadership position, including Vice President of Advanced Development and Chief Technology Officer. Mr. Stanford serves on several boards including Times Squared Academy Charter School and the Business Innovation Factory.

Mr. Stanford is a member of the RI Science and Technology Advisory Council. He serves on the Brown advisory councils to the President and the School of Engineering. In 1999 Mr. Stanford received the Black Engineer of the Year Award for Professional Achievement. In 1999 he also received the Honorable Thurgood Marshall Award for Community Service from the NAACP. In 2002 he received the Brown Graduate School's Distinguished Graduate Award and the RI Professional Engineer's Award for Community Service.

Martin Jaskel
Non-executive Director

Mr. Jaskel has over 40 years of involvement in the financial services industry. He began in the United Kingdom government bond market as a broker with leading firms, latterly as a Partner in W Greenwell & Co. In 1986, as an element of the deregulation of the UK markets, W Greenwell was sold to Midland Bank and became the leading Gilt-Edged Market Maker, of which Mr. Jaskel was a Director. In 1988 he was appointed Director of Global Sales and Marketing of Midland Montagu Treasury (the treasury division of Midland Bank) after chairing a committee to redesign the distribution of treasury products. In 1990 he was appointed Director of Global Sales at NatWest Treasury and rebuilt the franchise global distribution of treasury and capital markets products.

In 1994 he was promoted to Managing Director of Global Trade and Banking Services. He sat on the Advisory Board of ECGD, the UK export import bank, was responsible for several years for signing off all the UK exposure to BAE and Airbus and sat on several government and Bank of England advisory boards. In 1997 he left NatWest and founded a financial services consultancy, which included a consultancy at KPMG Corporate Finance and the corporate FX division of Travelex plc, and an interim appointment as the Managing Director of a private real estate company with a £500 million portfolio of commercial and residential property. In 2005 he joined European American Capital Limited, an FCA-authorized and regulated specialized advisory bank, as a Director. He has wide experience as a Non-executive Director of both publicly quoted and private companies.

Key

Audit Committee   Compensation Committee   Government Security Committee   Nominating Committee

Senior management

Our senior management team highlights our strong internal talent base, providing clear direction and support for all areas of the business.

Brian McLain
Chief Financial Officer and Company Secretary

Mr. McLain has been Spectra's Chief Financial Officer since January 2017. Before joining Spectra, he served as the Corporate Controller for OMNIlife Science, Inc. Prior to OMNIlife Science, he progressed from the role of Corporate Controller to Vice President, Finance & Business Solutions at SeraCare Life Sciences, Inc., which was quoted on NASDAQ prior to being bought out in 2012. Previously, he served in various finance roles at International Power, a UK-owned power producer, and Excelergy Corporation, a venture-backed software business. He started his career at Arthur Andersen. Mr. McLain holds a BS from Boston College and is a licensed Certified Public Accountant.

James Cherry
Director of Authentication Systems

Mr. Cherry serves as Director of Authentication Systems. He joined the Company in 2002 from Auspex Systems, an enterprise network data storage system business, where he had been involved in marketing and product management for seven years. Prior to that, he had worked for five years at DuPont in product management.

Scott Tillotson
Director of Secure Transactions

Mr. Tillotson serves as Director of Secure Transactions Group. He has held a variety of positions with Spectra for ten years and GTECH Corporation, a leader in the lottery industry, for nine years, in product marketing and management. Prior to that, he worked for the IBM Corporation as an Account Executive and Systems Engineer. Mr. Tillotson holds a BSEE from Purdue University.

William Goltsos
Vice President of Engineering

Dr. Goltsos was appointed Vice President of Engineering in April 2000. From September 1996 to April 2000, he served as Senior Systems Engineer. Prior to that, from 1992 to 1996, he served as a staff member of the MIT/Lincoln Laboratory's Optical Communications Group. Dr. Goltsos holds a BS in Physics from Rensselaer Polytechnic Institute and an MS and PhD in Physics from Brown University.

Andrei Smuk
Director of Research and Development

Dr. Smuk, who joined the Company in 2000, was appointed Director of Research and Development in 2006. He is responsible for the development of advanced materials and innovative sensor systems. He received a PhD in Physics from Brown University in 2000 and an MS in Applied Physics from the Moscow Institute of Physics and Technology in 1994.

Directors' report
for the year ended December 31, 2017

The Directors present their report and the audited consolidated financial statements for the year ended December 31, 2017.

Domicile

Spectra Systems Corporation is a C corporation and is registered and domiciled in the United States of America.

Principal activity

The principal activity of the Company is to invent, develop and sell integrated optical systems that provide customers with increased efficiency, security tracking and product life. The integrated systems combine consumables and engineered optical materials with software and hardware for use in applications. The Company also provides software tools to the lottery and gaming industries for fraud, money laundering and match fixing detection, as well as statistical analysis.

Results and dividends

The Company's statements of income and other comprehensive income are set out on page 18 and show the results for each year.

There are nominal federal and state income tax liabilities on the respective income tax returns due to timing differences arising between items of income and expense recorded on the books and those reported on the tax returns. Additionally, the Company has approximately US$23 million in federal and US$150,000 in state net operating loss carryforwards to offset future income reported on the respective tax returns.

The Directors intend to pay a dividend of US$0.06 per share on or about June 29, 2018 to shareholders of record as of June 8, 2018.

Review of business and future developments

A review of the operations of the Group is contained in the Spectra at a glance review on page 2.

Principal risks and uncertainties and financial risk management

Complex products

Certain of the products produced by the Company are highly complex and are designed to be used in complex systems. Failure to correct errors or other problems identified after deployment could result in events that may have a negative effect on the Company's business and financial condition.

The Company's markets may become impacted by technological change

Markets for the Company's products may become characterized by rapidly changing technology, evolving industry standards and increasingly sophisticated customer requirements. The introduction of products embodying new technology and the emergence of new industry standards could render the Company's existing products obsolete and unmarketable and may exert pricing pressure on existing products. If the Company could not then develop products that remain competitive in terms of technology and price and that meet customer needs, this could have a negative impact on the business.

Expiry of patents

All patents have a limited duration of enforceability. US patents generally have a duration of 20 years from the filing date. Once a patent expires, the invention disclosed in the patent may be freely used by the public without accounting to the patent owner, as long as there are no other unexpired patents that embrace an aspect of the invention. There is no certainty that any improvement, new use or new formulation will be patented to extend the protection of the underlying invention or provide additional coverage to adequately protect the invention. As a result, the public may have the right to freely use the invention described in and previously protected by an expired patent.

Dependence on key personnel

The success of the Company's revenues are dependent on a limited number of employees, in particular the Chief Executive Officer and other managers with technological and development input. The Company has endeavored to ensure that its key employees are incentivized but cannot guarantee the retention of these staff.

Forward-looking statements

All statements, other than statements of historical fact, contained in this document constitute "forward-looking statements". In some cases, forward-looking statements can be identified by terms such as "may", "intend", "might", "will", "should", "could", "would", "believe", or the negative of these terms and similar expressions. Such forward-looking statements are based on assumptions and estimates, and involve risks, uncertainties and other factors which may cause the actual results, financial condition, performance or achievements of the Company, or industry results to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. New factors may emerge from time to time that could cause the Company's business not to develop as it expects and it is not possible for the Company to predict all such factors. Given these uncertainties, investors are cautioned not to place any undue reliance on such forward-looking statements. Except as required by law, the Company disclaims any obligation to update any such forward-looking statements in this document to reflect future events or developments.

Key performance indicators (in thousands)

- Revenue of US$12,170k (2016: US$11,122k).
- Adjusted EBITDA of US$4,349k (2016: US$2,383k).
- Adjusted PBTA of US$4,010k (2016: US$1,999k).
- Basic earnings per share, in cents, of US$0.07 (2016: US$0.03).

Post-reporting date events

During January 2018, the Company executed an exclusive, worldwide, licensing agreement for one of its existing products which is currently in use by 18 central banks through an existing licensee, a major supplier of banknotes worldwide. The licensing agreement will extend the rights to the underlying technology, which has been in use since 2003, in perpetuity, and generate US$11.2 million in royalty payments over the next five years. The payments will be settled in eleven equally spaced payments. In addition, the Company also executed a Material Supply Agreement with the same licensee to continue to provide them with covert materials, exclusively, for a period of ten years at reduced rates relative to the current agreement.

Financial instruments

Details of the use of financial instruments by the Company are contained in note B of the financial statements.

Directors' responsibilities

The Directors are responsible for preparing the Directors' report and the financial statements on the basis of preparation set out in note A of the financial statements and in accordance with United States Generally Accepted Accounting Principles (US GAAP). The Directors of the Company are responsible for the document in which the financial information is included.

In preparing these financial statements, the Directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgments and accounting estimates that are reasonable and prudent; and
- state whether they have been prepared in accordance with US GAAP, subject to any material departures disclosed and explained in the financial statements.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Company's transactions, disclose with reasonable accuracy at any time the financial position of the Company and enable them to ensure that the financial statements comply with all legal requirements. They are also responsible for safeguarding the assets of the Company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Directors' interests

The Directors' beneficial interests in the common stock of the Company were as follows:

	December 31,	
Ordinary shares	**2017**	2016
N. Lawandy	**1,883,540**	1,883,540
M. Jaskel	**37,963**	9,960
	1,921,503	1,893,500

Substantial shareholdings

The following shareholders held 3% or more of the issued common stock of the Company at December 31, 2017:

	Ordinary shares	% issued
Mercantile Investment Company Ltd.	6,800,000	14.97
O. Salam	3,594,464	7.91
N. Slater	3,210,000	7.07
Herald Investment Management Ltd.	2,929,300	6.45
N. Lawandy	1,883,540	4.15
H. Heye	1,813,850	3.99
	20,231,154	44.54

Directors' compensation

The following table details the Directors' earned compensation for the year ended December 31, 2017:

	Salary and bonus	Benefits	Board fees	Total compensation
Executive Directors				
N. Lawandy	$ 575,000	$ 34,386	$ —	$ 609,386
Non-executive Directors				
B. Penn	—	—	18,000	18,000
M. Jaskel	—	—	18,000	18,000
D. Stanford	—	—	18,000	18,000
Total	**$ 575,000**	**$ 34,386**	**$ 54,000**	**$ 663,386**

Directors' share options

At December 31, 2017, Directors had options or warrants to purchase ordinary shares under the Company's stock option plan as follows:

	Options held at December 31, 2017	Weighted average exercise price	Options vested at December 31, 2017
N. Lawandy	4,030,292	$ 0.56	3,403,271
B. Penn	220,000	0.50	186,666
M. Jaskel	160,000	0.46	126,666
D. Stanford	220,000	0.50	186,666
	4,630,292	**$ 0.55**	**3,903,269**

Corporate governance

At both December 31, 2017 and the date of this report, the Board comprised one Executive Director, Nabil Lawandy, and three independent Non-executive Directors, BJ Penn, as Chairman, Martin Jaskel and Donald Stanford. The Board usually meets at least every three months to closely monitor the progress of the Company towards the achievement of budgets, targets and strategic objectives.

The Board also operates four Committees, the Audit Committee, the Compensation Committee, the Nominating Committee and the Government Security Committee.

The Audit Committee comprises Martin Jaskel as Chairman, Nabil Lawandy and Donald Stanford. It has primary responsibility for monitoring the quality of internal controls and ensuring that the financial performance of the Company is properly measured and reported on. It will receive and review reports from the Company's management and auditor relating to the interim and annual accounts and the accounting and internal control systems in use throughout the Company. The Audit Committee intends to meet no less than three times each financial year and will have unrestricted access to the Company's auditor.

The Compensation Committee comprises Donald Stanford as Chairman, Martin Jaskel and BJ Penn. It reviews the performance of the Executive Directors and makes recommendations to the Board on matters relating to remuneration and terms of employment. The Committee also makes recommendations to the Board on proposals for the granting of share options and other equity incentives pursuant to any share options scheme or equity incentive scheme in operation from time to time.

The Nominating Committee comprises Martin Jaskel, as Chairman, BJ Penn and Donald Stanford. The Committee seeks and nominates qualified candidates for election or appointment to Spectra's Board of Directors.

The Government Security Committee comprises BJ Penn, as Chairman, and Nabil Lawandy. It is responsible for ensuring the implementation within the Company of all procedures, organizational matters and other aspects pertaining to the security and safeguarding of information, including the exercise of appropriate oversight and the monitoring of operations to ensure that protective measures are effectively maintained and implemented.

The Board intends to comply with Rule 21 of the AIM Rules relating to Directors' dealings and will also take all reasonable steps to ensure compliance by the Company's applicable employees. The Company has adopted a share dealing code for this purpose on substantially the same terms as the Model Code.

Website publication

The Directors are responsible for ensuring the annual report and the financial statements are made available on a website. Financial statements are published on the Company's website in accordance with legislation in the United Kingdom governing the preparation and dissemination of financial statements, which may vary from legislation in other jurisdictions. The maintenance and integrity of the Company's website is the responsibility of the Directors. The Directors' responsibility also extends to the ongoing integrity of the financial statements contained therein.

Auditor

All of the current Directors have made themselves aware of any information needed by the Company's auditor for the purposes of its audit and have established that the auditor is aware of that information. The Directors are not aware of any relevant information of which the auditor is unaware.

Miller Wachman LLP have expressed their willingness to continue as the Company's auditor and a resolution to re-appoint Miller Wachman LLP will be proposed at the Annual General Meeting.

By order of the Board

Brian McLain
Company Secretary
April 3, 2018

Independent auditor's report

To the Board of Directors and Stockholders of Spectra Systems Corporation

We have audited the accompanying financial statements of Spectra Systems Corporation, which comprise the balance sheets as of December 31, 2017 and 2016, and the related statements of income and other comprehensive income, stockholders' equity, and cash flows for the years then ended, and the related notes to the financial statements.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Spectra Systems Corporation as of December 31, 2017 and 2016, and the results of its operations and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Miller Wachman LLP

Miller Wachman LLP
Boston, Massachusetts
March 28, 2018

Balance sheets
December 31, 2017 and 2016

		2017		2016
Assets				
Current assets				
Cash and cash equivalents	$	11,180,578	$	8,807,868
Accounts receivable, net of allowance for doubtful accounts of US$48,000 and US$12,500 in 2017 and 2016, respectively		1,244,507		2,538,230
Other receivables		180,794		167,792
Inventory		3,754,610		2,914,671
Prepaid expenses		115,887		103,981
Total current assets		16,476,376		14,532,542
Property, plant and equipment, net		1,794,460		2,560,970
Other assets				
Intangible assets, net		6,966,367		7,304,113
Restricted cash and investments		1,099,021		1,091,732
Deferred tax assets		1,225,000		989,000
Other assets		151,391		145,727
Total other assets		9,441,779		9,530,572
Total assets	$	27,712,615	$	26,624,084
Liabilities and stockholders' equity				
Current liabilities				
Accounts payable	$	200,242	$	401,603
Accrued expenses and other liabilities		1,520,736		1,437,346
Taxes payable		8,178		—
Deferred revenue		1,074,184		1,260,319
Total current liabilities		2,803,340		3,099,268
Non-current liabilities				
Deferred revenue		457,786		255,886
Total non-current liabilities		457,786		255,886
Total liabilities		3,261,126		3,355,154
Commitments and contingencies (note J)				
Stockholders' equity				
Common stock, US$0.01 par value, 125,000,000 shares authorized at December 31, 2017 and 2016; 45,434,754 and 45,251,370 shares issued and outstanding at December 31, 2017 and 2016, respectively		454,348		452,514
Additional paid-in capital – common stock		55,223,989		55,061,067
Accumulated other comprehensive loss		(105,254)		(113,313)
Accumulated deficit		(31,121,594)		(32,131,338)
Total stockholders' equity		24,451,489		23,268,930
Total liabilities and stockholders' equity	$	27,712,615	$	26,624,084

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

Statements of income and other comprehensive income
for the years ended December 31, 2017 and 2016

	2017	2016
Revenues		
Product	$ 9,388,129	$ 9,036,814
Service	1,629,412	1,620,503
Royalty	1,152,231	464,302
Total revenues	12,169,772	11,121,619
Cost of sales	3,514,245	3,523,360
Gross profit	8,655,527	7,598,259
Operating expenses		
Research and development	1,765,149	2,347,591
General and administrative	3,293,262	3,421,310
Sales and marketing	566,544	737,273
Total operating expenses	5,624,955	6,506,174
Income from operations	3,030,572	1,092,085
Other income/(expense)		
Interest income	60,480	52,432
Other income, net	—	351
Foreign currency loss	1,680	(5,815)
Total other income, net	62,160	46,968
Income before provision for income taxes	3,092,732	1,139,053
Income tax benefit	187,350	—
Net income	$ 3,280,082	$ 1,139,053
Earnings per share		
Basic	$ 0.07	$ 0.03
Diluted	$ 0.07	$ 0.03
Weighted average number of common shares		
Basic	45,369,084	45,251,370
Diluted	47,881,783	45,297,370
Other comprehensive income/(loss)		
Unrealized income/(loss) on currency exchange	$ 9,739	$ (32,837)
Reclassification for realized loss in net income	(1,680)	5,815
Total other comprehensive income/(loss)	8,059	(27,022)
Comprehensive income	$ 3,288,141	$ 1,112,031

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

Statements of stockholders' equity
for the years ended December 31, 2017 and 2016

	Common stock					
	Shares	Amount	Additional paid-in capital	Accumulated deficit	Other comprehensive loss	Total stockholders' equity
Balance at December 31, 2015	**45,251,370**	**$ 452,514**	**$ 54,936,776**	**$ (33,270,391)**	**$ (86,291)**	**$ 22,032,608**
Compensation cost related to amortization of stock options	—	—	124,291	—	—	124,291
Reclassification for realized loss in net income	—	—	—	—	5,815	5,815
Unrealized loss on currency exchange	—	—	—	—	(32,837)	(32,837)
Net income	—	—	—	1,139,053	—	1,139,053
Balance at December 31, 2016	**45,251,370**	**$ 452,514**	**$ 55,061,067**	**$ (32,131,338)**	**$ (113,313)**	**$ 23,268,930**
Compensation cost related to amortization of stock options	—	—	122,956	—	—	122,956
Reclassification for realized loss in net income	—	—	—	—	(1,680)	(1,680)
Unrealized loss on currency exchange	—	—	—	—	9,739	9,739
Exercise of stock options	183,384	1,834	39,966	—	—	41,800
Dividends paid	—	—	—	(2,270,338)	—	(2,270,338)
Net income	—	—	—	3,280,082	—	3,280,082
Balance at December 31, 2017	**45,434,754**	**$ 454,348**	**$ 55,223,989**	**$ (31,121,594)**	**$ (105,254)**	**$ 24,451,489**

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

Statements of cash flows
for the years ended December 31, 2017 and 2016

		2017		2016
Cash flows from operating activities				
Net income	$	3,280,082	$	1,139,053
Adjustments to reconcile net income to net cash provided by operating activities:				
Depreciation and amortization		1,103,388		1,097,673
Stock-based compensation expense		122,956		124,291
Deferred taxes		(236,000)		—
Allowance for doubtful accounts		35,500		22,177
Inventory obsolescence		92,426		—
Loss on sale of property and equipment		32,420		—
Changes in operating assets and liabilities:				
Accounts receivable		1,258,223		1,638,365
Other receivable		(12,106)		(115,442)
Inventory		(932,365)		143,013
Prepaid expenses		(9,873)		21,455
Other assets		3,156		(2,656)
Accounts payable		(170,319)		(1,126,920)
Accrued expenses and other liabilities		89,042		(128,068)
Deferred revenue		12,965		(8,306)
Net cash provided by operating activities		4,669,495		2,804,635
Cash flows from investing activities				
Restricted cash and investments		(7,289)		(18,174)
Payment of patent and trademark costs		(395,711)		(390,679)
Payment of software costs		(8,575)		(123,675)
Asset acquisitions		—		(3,118,489)
Cash proceeds on sale of property and equipment		405,400		—
Purchases of property, plant, and equipment		(71,276)		(129,646)
Net cash used in investing activities		(77,451)		(3,780,663)
Cash flows from financing activities				
Dividends paid		(2,270,338)		—
Proceeds from exercise of stock options		41,800		—
Net cash used in financing activities		(2,228,538)		—
Effect of exchange rate on cash and cash equivalents		9,204		(24,591)
Net increase/(decrease) in cash and cash equivalents		2,372,710		(1,000,619)
Cash and cash equivalents, beginning of the year		8,807,868		9,808,487
Cash and cash equivalents, end of the year	$	11,180,578	$	8,807,868
Supplemental disclosures of cash flow information				
Income taxes paid	$	41,331	$	—
Non-cash investing activities				
Acquisition of patents through accounts payable	$	33,008	$	64,428

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

Note A – Corporate information

Spectra Systems Corporation (the "Company") develops and sells integrated optical systems that provide customers with increased efficiency, security tracking and product life. The integrated systems combine consumables and engineered optical materials with software and hardware for use in applications. The Company develops and sells its integrated solutions across a spectrum of markets, including currency manufacturing and cleaning, branded products, industrial logistics and other highly sensitive documents. The Company also provides software tools to the lottery and gaming industries for fraud, money laundering and match fixing detection, as well as statistical analysis.

The Company was incorporated on July 3, 1996 in Delaware as Spectra Acquisition Corp. On August 26, 1996, the Company purchased substantially all of the assets of SSC Science Corporation and changed its name to Spectra Science Corporation. The assets were purchased for US$1,654,000 in cash plus common stock warrants. The acquisition was accounted for using the purchase method of accounting.

On June 8, 2001, the Company changed its name to Spectra Systems Corporation.

On July, 25 2011, the Company raised US$20,241,179, net of offering costs, on the London Stock Exchange in a placing of 18,592,320 common shares at a placing price of £0.753 per new common share, representing 41.09% of the enlarged common share capital of the Company. As a result of the offering, anti-dilution provisions found in the Company's Amended and Restated Certificate of Incorporation converted all of the issued and outstanding preferred shares into 17,185,052 common shares, giving 26,659,050 common shares in issue at the time of the placing.

On June 6, 2012, the Company acquired all of the assets of ESI Integrity, Inc., including its proprietary source codes, multi-year contracts, long-standing customer relationships and assumed liabilities. US$1,425,000 was paid in consideration for the assets.

On September 14, 2012, the Company acquired certain assets of Lapis Software Associates, including its proprietary source codes, multi-year and long-standing customer relationships, and assumed liabilities. US$726,000 was paid in consideration for the assets.

On February 28, 2014, the Company acquired certain assets of Inksure Technologies, Inc., including its long-standing customer relationships and authentication technology. US$1,356,000 was paid in consideration for the assets.

On September 30, 2015, the Company acquired certain assets of Solaris Nanosciences, Inc. (Solaris), including technology and customer relationships in exchange for US$213,917 in cash. The Company also recorded US$184,000 in contingent payments based on a royalty payment arrangement for anticipated continuing business.

On January 28, 2016, the Company acquired certain specialty phosphor assets including technology and customer relationships. The total consideration amounted to US$3,118,489 (See note M).

Note B – Significant accounting policies

Use of estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (US GAAP) requires management to make estimates and judgments that affect the amounts reported in the financial statements and accompanying notes. The accounting estimates that require management's most difficult and subjective judgments include the assessment of recoverability of property, plant, and equipment; the valuation of inventory; intangible assets; stock-based compensation and the recognition and measurement of income tax assets and liabilities. The actual results may differ materially from management's estimates.

Cash and cash equivalents

The Company considers highly liquid investment purchases with a maturity of 90 days or less at the date of acquisition to be cash equivalents.

Restricted cash and investments

Restricted cash and investments represents a certificate of deposit held as collateral for certain performance requirements in accordance with terms of a services contract. As of both December 31, 2017 and 2016, the agreement required that US$500,000 be maintained as collateral. The collateral will be released as the Company meets contractual milestones. Restricted cash and investments of US$1,099,021 and US$1,091,732 as of December 31, 2017 and 2016, respectively, are certificates of deposit whose maturity exceeded 90 days at the date of acquisition, of which US$500,000 is restricted.

Note B – Significant accounting policies continued

Significant concentrations

Financial instruments, which potentially subject the Company to concentrations of credit risk, consist principally of cash and cash equivalents and trade accounts receivable. The Company's cash management policies restrict investments to low-risk highly liquid securities, and the Company restricts its transactions to financial institutions with good credit standing. The Company has cash and investments, including restricted, on deposit with financial institutions which are insured by either the Federal Deposit Insurance Corporation up to US$250,000 per institution or the Canadian Deposit Insurance Corporation up to 100,000 Canadian Dollars per institution. The Company also maintains cash on hand which is not subject to insurance. As of December 31, 2017, the amount of cash and investments, including restricted, not insured was US$11,700,099.

Concentrations of credit risk with respect to trade accounts receivable are limited due to the concentration of business with government entities. The Company's management attempts to minimize credit risk on its accounts receivable by monitoring credit exposure on a regular basis.

The following table summarizes the number of customers that individually comprise greater than 10% of total accounts receivable and their aggregate percentage of the Company's total accounts receivable as of:

	December 31,	
	2017	2016
Number of significant customers	**2**	3
Percentage of total receivables	**64%**	73%

The following table summarizes the number of customers that individually comprise greater than 10% of total revenues and their aggregate percentage of the Company's total revenues for the years ended:

	December 31,	
	2017	2016
Number of significant customers	**3**	3
Percentage of total revenue	**64%**	64%

The following table summarizes the geographic concentration of revenue for the years ended:

	December 31,	
	2017	2016
United States of America	**$ 8,033,065**	$ 7,951,227
Europe	**3,044,916**	2,165,437
Rest of World	**1,091,791**	1,004,955
	$ 12,169,772	$ 11,121,619

Accounts receivable

Accounts receivable are stated at the amount management expects to collect from outstanding customer accounts. Management provides for uncollectible accounts through a provision for bad debt expense. At December 31, 2017 and 2016, the Company had a US$48,000 and a US$12,500 allowance for doubtful accounts, respectively.

Note B – Significant accounting policies continued

Fair value of financial instruments

As of both December 31, 2017 and 2016, the carrying amounts of the Company's financial instruments, which include cash and cash equivalents, accounts receivable and accounts payable, are carried in the financial statements at amounts that approximate their fair market values due to their short-term nature.

Fair value is the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is estimated by applying the following hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

Level 1 – Quoted prices in active markets for identical assets or liabilities.

Level 2 – Observable inputs other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 – Inputs that are generally unobservable and typically reflect management's estimate of assumptions that market participants would use in pricing the asset or liability.

As of December 31, 2017 and 2016, the Company has certificates of deposit of US$1,099,021 and US$1,091,732, respectively, which is included in restricted cash and investments. The Company considers this certificate of deposit as a Level 2 investment.

Foreign currency translation

The functional currency of the Company's foreign operations is the applicable local currency, the Canadian Dollar. The functional currency is translated into US Dollars for balance sheet accounts using currency exchange rates in effect as of the balance sheet date and for revenue and expense accounts using an average exchange rate in effect during the applicable period. The translation adjustments are deferred as a separate component of stockholders' equity in accumulated other comprehensive loss.

Inventory

Inventories are stated at the lower of cost or market. Cost is determined using the first-in, first-out method. The Company regularly reviews inventory quantities on hand and records a provision to write down excess and obsolete inventory to its estimated net realizable value if less than cost.

Intangible assets

Goodwill represents the excess of purchase price over the fair value of the net assets acquired. Goodwill is not amortized, but is subject to at least an annual assessment for impairment or whenever events or circumstances indicate that it might be impaired.

Other intangible assets consist of patents, trademarks and various intangible assets identified as part of a business combination such as contracts, customer relationships and technology. Patents and trademarks are recorded at cost. For intangible assets identified as part of a business combination, values are assigned using various valuation techniques, including the present value of expected future cash flows. Intangible assets are amortized using the straight-line method over their estimated useful lives ranging from seven to 15 years. The Company evaluates the possible impairment of its intangible assets annually or whenever events or circumstances indicate the carrying value of the assets may not be recoverable.

Property and equipment

Property and equipment is stated on the basis of purchase price. Depreciation is calculated using the straight-line method over the following estimated useful lives:

Laboratory equipment	3–7 years
Computer and office equipment	3–5 years
Furniture and fixtures	7 years
Leasehold improvements	Shorter of lease term or estimated useful life
Software	3–5 years
Manufacturing equipment	5–7 years

Maintenance and repairs are charged to expense as incurred. When assets are retired or otherwise disposed of, the assets and related allowances for depreciation and amortization are eliminated from accounts and any resulting gain or loss is reflected in net income.

Note B – Significant accounting policies continued

Investment in affiliates

The Company accounts for investments in affiliates under the cost method of accounting if the Company owns less than 20% of the affiliates' outstanding capital. As of December 31, 2017, the Company held a 19% ownership in an affiliate (SpectraMed), and a 10% ownership in an affiliate (Solaris). These affiliates have had significant losses in prior years and the Company had previously reduced its investments in these affiliates to US$nil.

Accounting for stock-based compensation

In accounting for the Employee Stock Option Plan, the Company uses the Black-Scholes option pricing model to calculate compensation costs associated with options granted to employees. Total compensation costs are recorded over the option vesting period, generally three years using the straight-line attribution method.

Revenue recognition

Product revenue includes sales of pigments and security taggants, delivery of prototypes and contracts with multiple elements including nonrecurring engineering and follow-on manufacturing. Service revenue includes research and development services provided for a fixed price or provided for a specific period.

Revenues related to sales of pigments and security taggants and research and development services provided for a specific period are generally recognized when products are shipped or services are provided, the risk of loss has passed to the customer, the sales price is fixed or determinable and collectability is reasonably assured.

Revenue from multiple element arrangements is deferred until all elements of the contract are delivered unless all of the following criteria have been met: (1) the product or service has been delivered; (2) the fee for the delivered element is not subject to forfeiture, refund or concession based on performance or delivery of the undelivered element; and (3) the fair value of the delivered element is determined based upon the price charged by the Company or the price charged by competitors when similar services or products are sold separately, in which case the revenues for each element will be recognized independently in accordance with the Company's policy.

The Company enters into arrangements that can include various combinations of software, services and hardware. Where elements are delivered over different periods of time, and when allowed under US GAAP, revenue is allocated to the respective elements based on their relative selling prices at the inception of the arrangement, and revenue is recognized as each element is delivered.

Revenue from fixed-price development contracts is recognized on the percentage-of-completion method, measured by the percentage of effort incurred to date to estimated total effort for each contract. That method is used because management considers total effort to be the best available measure of progress on the contracts. Because of inherent uncertainties in estimating effort, it is at least reasonably possible that the estimates used will change within the near term.

Royalties are recognized when they are earned based on sales or use of technologies by third parties except where future income is not anticipated to cover non-refundable advances received, when the excess royalty is taken to income.

Research and development

Internal research and development costs are expensed as incurred. Certain third party research and development costs are capitalized in connection with contracted work. These costs are expensed as certain milestones are achieved. Overhead, general and administrative and training costs are expensed as incurred.

Income tax

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income taxes. The benefits from net operating losses carried forward may be impaired or limited in certain circumstances. In addition, a valuation allowance can be provided for deferred tax assets when it is more likely than not that all or some portion of the deferred tax asset will not be realized. For both 2017 and 2016, there is no federal or state income tax liability on those respective income tax returns.

Advertising costs

Advertising costs are charged to expense when incurred. Advertising expense was US$6,428 and US$36,725 for 2017 and 2016, respectively.

Shipping and handling

The Company reports the cost of shipping and handling as an operating expense. Shipping and handling expense was US$95,537 and US$138,262 for 2017 and 2016, respectively.

Note C – Related party transactions

The Company sold phosphor products and received royalties amounting to approximately US$2,863,000 and US$2,684,000 for the years ended December 31, 2017 and 2016, respectively, to a company owned by a shareholder.

On September 30, 2015, the Company purchased certain assets from Solaris in exchange for US$213,917 in cash. The Company also recorded US$184,000 in contingent payments based on a royalty payment arrangement for anticipated continuing business. The agreement requires the Company to pay Solaris 10% of any revenues hereafter received by the Company from the commercial exploitation of the assets. The Chief Executive Officer of Solaris is also the Chief Executive Officer of Spectra. During the year ended December 31, 2017, the Company paid royalties of US$3,895 to Solaris. No royalty payments were made during the year ended December 31, 2016.

Note D – Inventories

Inventories consist of the following:

	December 31, 2017	December 31, 2016
Raw materials	$ 2,006,436	$ 2,079,163
Finished goods	1,840,600	835,508
Total	3,847,036	2,914,671
Less: reserve for excess and obsolete inventory	(92,426)	—
	$ 3,754,610	$ 2,914,671

Note E – Property and equipment

Property and equipment consists of the following:

	December 31, 2017	December 31, 2016
Laboratory equipment	$ 666,550	$ 655,335
Computer and office equipment	328,034	352,157
Furniture and fixtures	114,354	136,850
Leasehold improvements	1,487,849	1,470,046
Software	340,937	340,937
Manufacturing equipment	1,221,851	1,897,755
Total	4,159,575	4,853,080
Less: accumulated depreciation	(2,365,115)	(2,292,110)
	$ 1,794,460	$ 2,560,970

Depreciation expense amounted to US$401,198 and US$436,573 for the years ended December 31, 2017 and 2016, respectively. As part of its consolidation of East Providence operations (see note J), the Company disposed of US$331,227 and US$1,780,968 of fully depreciated equipment the years ended December 31, 2017 and 2016, respectively. During the year ended December 31, 2017, the Company sold machinery and received proceeds of US$405,400. The Company recorded a loss of US$32,420 on the sale.

Note F – Intangible assets

Intangible assets consist of the following:

	December 31, 2017	December 31, 2016
Patents	$ 2,834,431	$ 2,503,041
Customer relationships	3,043,000	3,043,000
Non-compete agreements	188,440	188,440
Developed technology	1,502,000	1,502,000
Tradename	30,000	30,000
Trademarks	123,448	90,547
Goodwill	2,468,863	2,468,863
Total	10,190,182	9,825,891
Less: accumulated amortization	(3,223,815)	(2,521,778)
	$ 6,966,367	$ 7,304,113

Amortization expense amounted to US$702,190 and US$661,100 for the years ended December 31, 2017 and 2016, respectively.

Estimated amortization expense is as follows:

Year ending December 31,	
2018	$ 582,400
2019	536,537
2020	458,258
2021	412,911
2022	398,798
Thereafter	2,108,600
	$ 4,497,504

Note G – Other assets

Other assets consist of the following:

	December 31, 2017	December 31, 2016
Rental deposits	$ 19,141	$ 18,897
Deferred contract costs	132,250	123,675
Other	—	3,155
	$ 151,391	$ 145,727

Note H – Accrued expenses and other liabilities

Accrued expenses and other liabilities consist of the following:

	December 31,			
		2017		2016
Royalties	$	700,345	$	793,719
Employee compensation		406,301		272,057
Contingent costs		180,105		184,000
Sales allowance and rebates		115,775		—
Professional fees		80,000		93,883
Property and franchise taxes		8,480		30,000
Product warranty		—		25,000
Other		29,730		38,687
	$	1,520,736	$	1,437,346

Note I – Income taxes

The approximate components of the income tax provision are as follows:

	December 31,			
		2017		2016
Income tax provision/(benefit) computed at:				
Federal statutory rate – current	$	1,204,000	$	351,000
State statutory rate – current		212,000		62,000
Federal deferred		(117,000)		90,000
State deferred		(20,000)		16,000
Change in valuation allowance		(1,092,000)		(519,000)
Income tax benefit	$	187,000	$	—

A reconciliation of the statutory federal income tax rate with our effective income tax rate was as follows:

	December 31,	
	2017	2016
Statutory federal rate	34.0%	34.0%
State income taxes, net of income tax benefit	0.2%	0.1%
Remeasurement of deferred taxes	(35.3%)	0.0%
Non-deductible expenses and other	(5.1%)	(28.1%)
Change in valuation allowance	0.0%	(6.0%)
Effective tax rate	(6.2%)	—

Note I – Income taxes continued

Approximate deferred income tax assets are as follows:

	December 31, 2017	December 31, 2016
Depreciation and amortization	$ (77,000)	$ (153,000)
Deferred revenue	(349,000)	(492,000)
Federal and state tax credits	918,000	1,054,000
Inventory	121,000	97,000
Bad debts	14,000	5,000
Net operating loss carryforward	5,053,000	8,643,000
Valuation allowance	(4,455,000)	(8,165,000)
Total deferred income tax assets	$ 1,225,000	$ 989,000

The Tax Cuts and Jobs Act (Tax Act) was enacted on December 22, 2017. The Tax Act eliminates alternative minimum taxes and lowers the federal corporate income tax rate from 34% to 21% effective January 1, 2018. The Company remeasured its net deferred tax assets using the new federal corporate income tax rate and posted a one-time reduction of US$2.0 million in deferred tax assets to reflect the lower realization rate to be applied commencing in 2018.

As of December 31, 2017, the Company has net operating loss carryforwards expiring between 2019 and 2036 for US federal income tax purposes of approximately US$23,000,000 and US$150,000 expiring between 2018 and 2020 for state income tax purposes. A valuation allowance has been established for US$4,455,000 and US$8,165,000 as of December 31, 2017 and 2016, respectively, for the deferred tax benefit related to those loss carryforwards and other deferred tax assets.

At December 31, 2017, the Company also had approximately US$920,000 of tax credit carryforwards that are available to offset federal and state liabilities. The credits will begin to expire between 2019 and 2029 for federal and between 2019 and 2024 for state.

The utilization of the tax carryforwards described above are dependent upon future profitability prior to any expiration dates. Additionally, alternative minimum taxes, if any, and substantial changes in ownership and tax laws and regulations may substantially limit their realization.

The Company accounts for the effect of any uncertain tax positions based on a "more likely than not" threshold to the recognition of the tax positions being sustained based on the technical merits of the position under scrutiny by the applicable taxing authority. If a tax position or positions are deemed to result in uncertainties of those positions, the unrecognized tax benefit is estimated based on a "cumulative probability assessment" that aggregates the estimated tax liability for all uncertain tax positions. The Company is not currently under examination by any taxing jurisdiction. The Company's federal and state income tax returns are generally open for examination for three years following the date filed.

Note J – Commitments and contingencies

The Company is involved from time to time in litigation incidental to the conduct of its business. The Company is not currently a party to any lawsuit or proceeding.

Lease commitments

The Company holds four real estate leases. The Company's lease agreement for corporate office space expired September 30, 2012 and is now in a month-to-month arrangement. The Company signed a five-year lease agreement for manufacturing and warehouse space in East Providence beginning in November 2013 and expiring in October 2022. To support the ICS business, the Company signed a lease which has been extended through January 2019. The Company's lease for laboratory space in East Providence has been extended through May 31, 2020 for a portion of the space. During 2017, the Company vacated the remaining portion of the space and consolidated its operations at its other East Providence locations. Rent expense was US$421,513 and US$434,591 for the years ended December 31, 2017 and 2016, respectively.

Note J – Commitments and contingencies continued

Lease commitments continued

Future minimum lease payments are as follows:

Year ending December 31,		
2018	$	248,379
2019		233,708
2020		166,940
2021		120,817
2022		102,770
	$	872,614

License and supply agreements

In 1996, and subsequently amended in 1999 and 2002, the Company entered into a license agreement under which the Company obtained a nonexclusive right to use certain technology through the term of the licensor's patents on such technology. The last of these patents expire during 2018. The license agreement contains provisions for royalties to be paid on sales of products developed under the agreement. For the years ended December 31, 2017 and 2016, the Company recorded US$164,768 and US$185,191, respectively, in royalty expense.

Note K – Stockholders' equity

Common and preferred stock

On July 25, 2011, the Company raised US$20,241,179, net of offering costs, on the London Stock Exchange in a placing of 18,592,320 common shares at a placing price of £0.753 per new common share, representing 41.09% of the enlarged common share capital of the Company. As a result of the offering, anti-dilution provisions found in the Company's Amended and Restated Certificate of Incorporation converted all of the issued and outstanding preferred shares into 17,185,052 common shares, giving 26,659,050 common shares in issue at the time of the placing. At December 31, 2017 there were 45,434,754 common shares issued and outstanding and no preferred shares in issue.

Stock option plan

In May 2007, the Company adopted the 2007 Stock Plan (the "2007 Plan"), which provided for the grant of incentive stock options and nonqualified stock options, stock awards and stock purchase rights for the purchase of up to 14,100,000 shares of the Company's common stock to officers, employees, consultants and Directors of the Company. The Board of Directors is responsible for administration of the 2007 Plan. The Board determines the term of each option, the option exercise price, and the number of shares for which each option is granted and the rate at which each option is exercisable. Incentive stock options may be granted to an officer or employee at an exercise price per share of not less than the fair value per common share on the date of the grant (not less than 110% of fair value in the case of holders of more than 10% of the Company's voting stock) and with a term not to exceed ten years from the date of the grant (five years for incentive stock options granted to holders of more than 10% of the Company's voting stock). Nonqualified stock options may be granted to consultants or Directors at an exercise price per share of not less than 85% of the fair value of the common stock. Stock options generally vest over three years and are exercisable over a period up to ten years from the date of grant. As of December 31, 2017, options to purchase 5,588,830 shares of common stock were outstanding and options covering 255,000 shares of common stock have been exercised under the 2007 Plan. As of December 31, 2017, 8,256,170 shares of common stock were available for grant under the 2007 Plan.

Note K – Stockholders' equity continued

Stock option plan continued

Information related to stock options granted by the Company is summarized as follows:

	December 31, 2017			December 31, 2016		
	Number of shares under option		Weighted average exercise price	Number of shares under option		Weighted average exercise price
Outstanding at beginning of year	7,047,414	$	0.51	6,012,391	$	0.74
Granted	250,000		0.49	3,306,689		0.37
Exercised	(255,000)		0.44	—		—
Forfeited/canceled	(1,453,584)		0.49	(2,271,666)		0.91
Outstanding at end of year	5,588,830	$	0.50	7,047,414	$	0.51

The following table summarizes information about stock options outstanding at December 31, 2017:

	Options outstanding				Options exercisable		
Exercise price range	Number of outstanding shares	Weighted average contractual life (years)		Weighted average exercise price	Number of shares		Weighted average exercise price
US$0.30–US$0.84	5,188,830	5.50	$	0.45	4,065,605	$	0.47
US$0.85–US$1.23	400,000	3.57		1.23	400,000		1.23
	5,588,830	5.36	$	0.50	4,465,605	$	0.54

As of December 31, 2017, the weighted average contractual life for exercisable stock options was 4.56 years.

The Company's stock price closed at US$1.12 (£0.835) on December 31, 2017. As of December 31, 2017, the aggregate intrinsic value for outstanding and exercisable stock options was US$3,689,175 and US$2,771,969, respectively. Intrinsic value for stock options is defined as the difference between the current market value of the stock and the exercise price. The intrinsic value represents the value that would have been received by the option holders had the option holders exercised all of their options as of that date.

The Company currently uses the Black-Scholes option pricing model to determine the fair value of its stock options. The valuations determined using this model are affected by assumptions regarding a number of complex and subjective variables including stock price, volatility, expected life of options, risk free interest rates, and expected dividends, if any. The Company recorded stock-based compensation costs of US$122,956 and US$124,291 for the years ended December 31, 2017 and 2016, respectively. There was no stock-based compensation expense capitalized during either year. During the year ended December 31, 2017, the weighted average grant date fair value of stock options granted was US$0.49. The assumptions used to value stock option grants are as follows for the year ended:

	December 31,	
	2017	2016
Risk free rate	2.1%	0.7%
Expected life (years)	6.00	5.00
Assumed volatility	84.7%	32.7%
Expected dividends	None	None

As of December 31, 2017, there was approximately US$157,000 of unrecognized compensation cost, related to unvested stock-based payments granted to our employees, Directors and consultants, which is expected to be recognized over a weighted average period of 1.2 years. Total unrecognized compensation cost will be adjusted for future changes in forfeitures and recognized over the remaining vesting periods of the stock grants.

Note L – Employee retirement plan

During 1999, the Company adopted a defined contribution plan, established under the guidelines of Section 401(k) of the Internal Revenue Code (IRC), which covers all employees. Employees are eligible to participate in the employee retirement plan (the "Plan") at the beginning of the first month following the date of hire. Employees may contribute up to the maximum allowed by the IRC of eligible pay on a pretax basis. The Company made a matching contribution of 50% of employee contributions up to 4% of eligible salary. Company matching contributions vest at 25% after one year of service, 50% at the end of two years of service and 100% at the end of three years of service. For the years ended December 31, 2017 and 2016, the Company's matching contributions were US$33,678 and US$39,482, respectively.

Note M – Business combinations

On January 29, 2016, the Company acquired certain specialty phosphor assets primarily used in the authentication of world banknotes for total consideration of US$3,118,489. In addition to the assets, most importantly, the Company has acquired long-standing customer relationships related to the assets including a major world supplier of banknote inks. The Company will incorporate the acquired assets within its existing phosphor business and reports this acquisition as part of its Authentication Systems segment.

The following tables provide further details of this acquisition:

Assets acquired	
Inventories	233,489
Goodwill	964,000
Customer relationships (15-year amortization period)	1,050,000
Developed technology (ten-year amortization period)	860,000
Non-compete agreement (three-year amortization period)	11,000
	3,118,489

Note N – Segment reporting

In accordance with ASC 280, management has identified three operating segments. The first is the Authentication Systems Group, which captures the hardware, software and materials related to the authentication of banknotes, tax stamps and other high-value goods. The second segment is the Secure Transactions Group, which provides an Internal Control System (ICS) software offering to the lottery and gaming industries. ICS provides tools for fraud, money laundering and match fixing detection, as well as statistical analysis. The third segment is the Banknote Cleaning Group, which captures the technology related to cleaning soiled banknotes.

Information for each reportable segment as of December 31, 2017 and 2016 is as follows:

		Gross revenue	Income/(loss) from operations	Depreciation and amortization	Capital expense	Segment assets
2016	Secure Transactions	$ 1,274,211	$ 350,686	$ 205,433	$ 16,206	$ 2,563,557
	Authentication Systems	9,847,408	791,399	849,539	40,000	23,165,251
	Banknote Cleaning	—	(50,000)	42,701	73,440	895,276
	Total	$ 11,121,619	$ 1,092,085	$ 1,097,673	$ 129,646	$ 26,624,084
2017	Secure Transactions	$ 1,347,010	$ 398,060	$ 207,568	$ 2,129	$ 2,219,415
	Authentication Systems	10,822,762	2,712,999	847,753	69,147	25,023,252
	Banknote Cleaning	—	(80,487)	48,067	—	469,948
	Total	**$ 12,169,772**	**$ 3,030,572**	**$ 1,103,388**	**$ 71,276**	**$ 27,712,615**

Note O – Earnings per share

The calculation of basic earnings per share is based on the net income divided by the weighted average number of common shares outstanding. Diluted earnings per share is calculated by considering the dilutive impact of common stock equivalents under the treasury stock method as if they were converted into common stock as of the beginning of the period or as of the date of grant, if later. Excluded from the calculation of diluted earnings per common share for the years ended December 31, 2017 and 2016 were 400,164 and 8,725,673 shares, respectively, related to stock options because their exercise prices would render them anti-dilutive. The following table shows the calculation of basic and diluted earnings per common share:

	December 31, 2017	December 31, 2016
Numerator		
Net income	$ 3,280,082	$ 1,139,053
Denominator		
Weighted average number of common shares outstanding	45,369,084	45,251,370
Effect of dilutive securities		
Stock options	2,512,699	46,000
Diluted weighted average number of common shares outstanding	47,881,783	45,297,370
Earnings per common share		
Basic	$ 0.07	$ 0.03
Diluted	$ 0.07	$ 0.03

Note P – Subsequent events

The Company evaluated all events or transactions that occurred through March 28, 2018, the date these financial statements were available to be issued.

On March 19, 2018, the Company declared a dividend of US$0.06 per share to be paid on or around June 29, 2018 to shareholders of record as of June 8, 2018.

During January 2018, the Company executed an exclusive, worldwide, licensing agreement for one of its existing products which is currently in use by 18 central banks through an existing licensee, a major supplier of banknotes worldwide. The licensing agreement will extend the rights to the underlying technology, which has been in use since 2003, in perpetuity and generate US$11.2 million in royalty payments over the next five years. The payments will be settled in eleven equally spaced payments. In addition, the Company also executed a Material Supply Agreement with the same licensee to continue to provide it with covert materials, exclusively, for a period of ten years at reduced rates relative to the current agreement.

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