



Quarterly Financial Results Briefing 1st Quarter of FY2021

QD Laser, Inc.
August 2021

Mission

**With the power of the semiconductor laser,
“I can’t” becomes “I can”.**

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What was once thought to be impossible is now a reality; we have become the only company in the world to successfully mass produce Quantum Dot LASERs.

Our laser technology will enable dramatic improvements in our ability to process information, support visually impaired people, prevent eye diseases, and enhance vision, continually pushing the boundaries of human possibility.

01

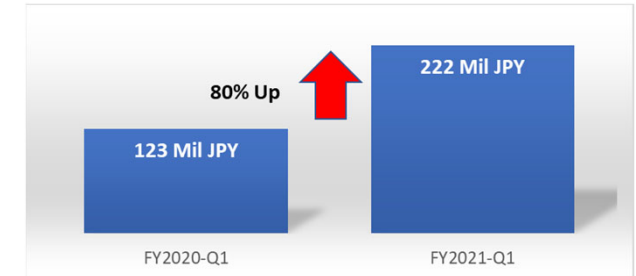


Financial Results for FY2021-Q1

Financial Results Highlights for FY2021-Q1 vs FY2020-Q1

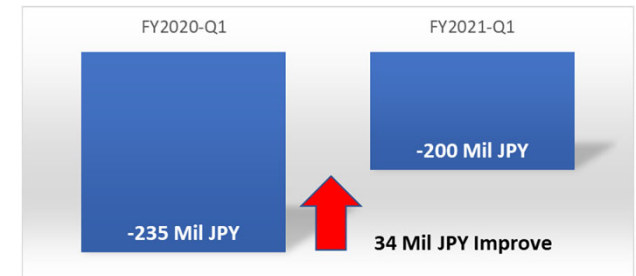
➤ 80% Sales Growth

Orders increased for the laser device business in DFB lasers for high-precision processing, compact visible lasers for biosensors, high-power lasers for sensors, and NRE (Non-Recurring Engineering). The laser eyewear business also increased due to sales to financial institutions.



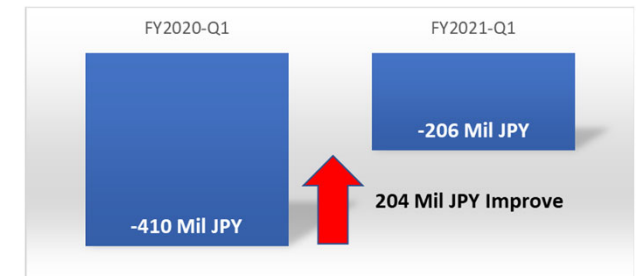
➤ 34 Million JPY Operating Loss Improved

Operating loss improved due to an increase in sales and a reduction in labor costs and development costs.



➤ 204 Million JPY Quarterly Net Loss Improved

The same period of the previous year recorded an impairment loss on fixed assets of 161 million yen in the laser eyewear business. However, it was only 2 million yen in the current fiscal year, and the quarterly net loss improved.



Financial Result Highlights for FY2021-Q1 vs FY2020-Q1

Sales Growth and Operating Loss Improved

80% sales growth driven by both businesses, and 34 million JPY operating loss improved.

Performance Summary

(Million JPY)	FY2021 1st Quarter	FY2020 1st Quarter	YOY
Sales	222	123	+80% (+ 99)
Operating Loss	△200	△235	+34
Ordinary Loss	△202	△249	+46
Quarterly Net Loss	△206	△410	+204

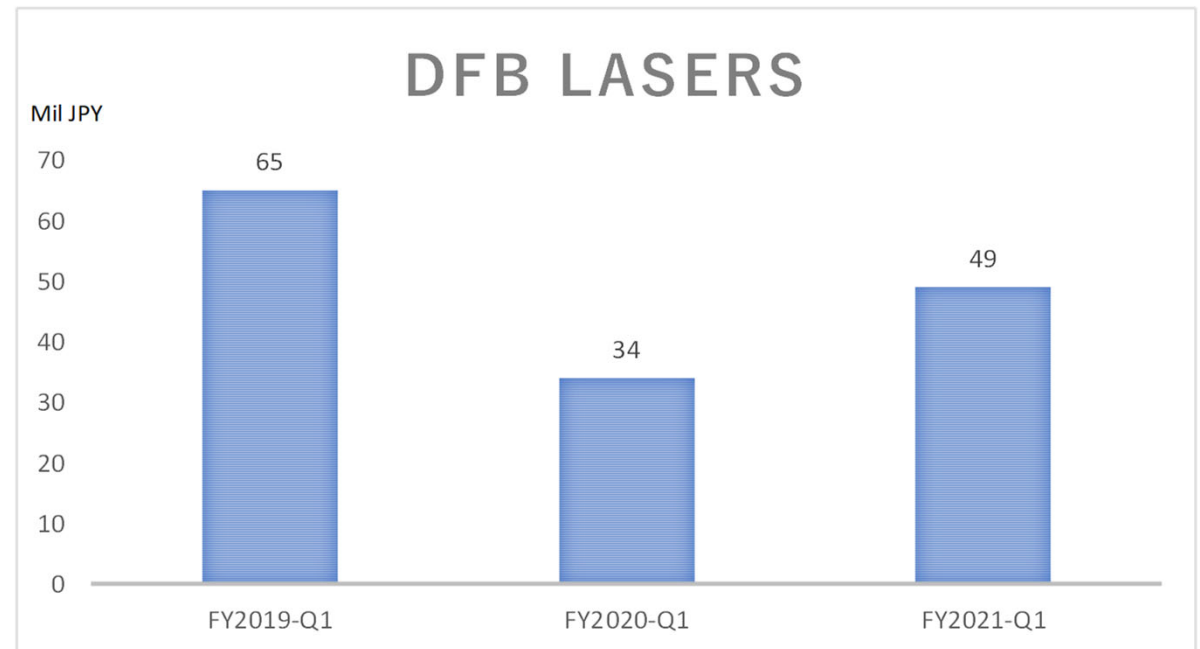
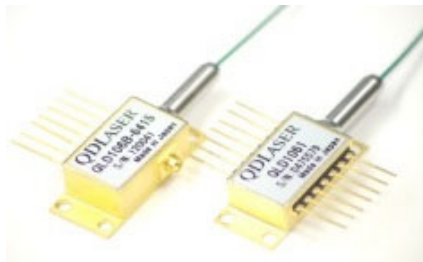
Sales by Product Group

(Million JPY)	FY2021 1st Quarter	FY2020 1st Quarter	YOY
DFB Laser	49	34	+44%
Compact Visible Laser	32	20	+60%
High-Power Laser	56	39	+44%
Quantum Dot Laser	12	19	-37%
NRE	55	0	-
Others	0	2	-100%
LD Total	206	117	+76%
LEW Total	16	6	+167%
Grand Total	222	123	+80%

DFB Lasers^{*1} for precision machining : Sales in FY2021-Q1

49 million JPY sales, increased by 44% YOY.

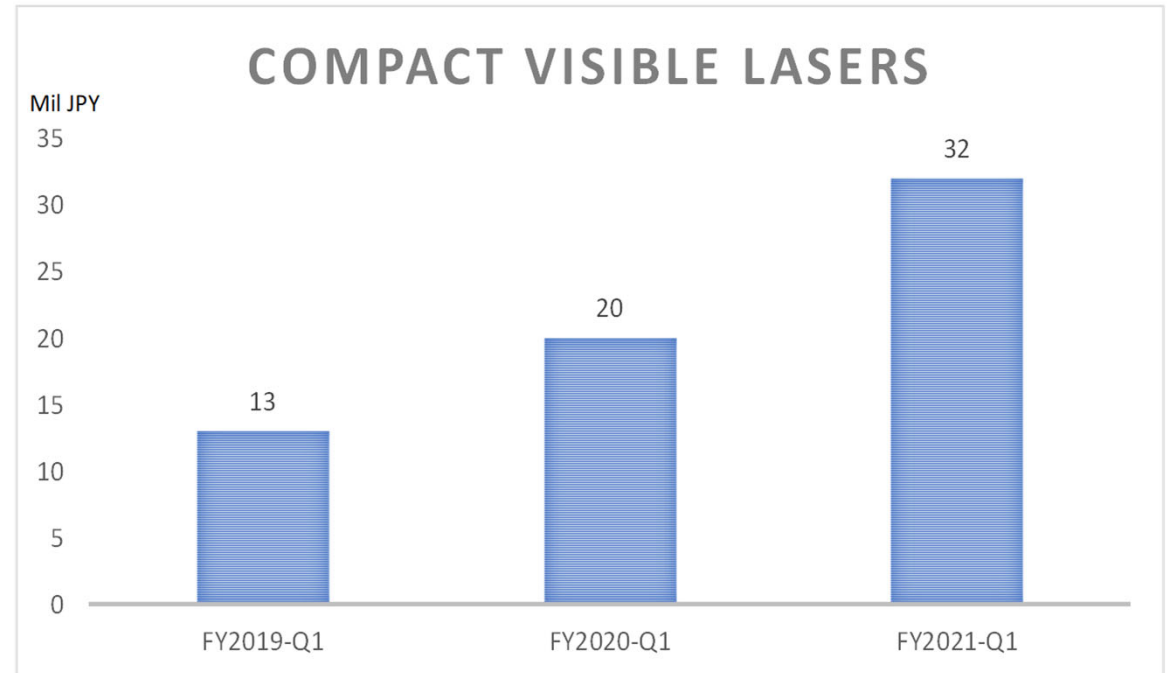
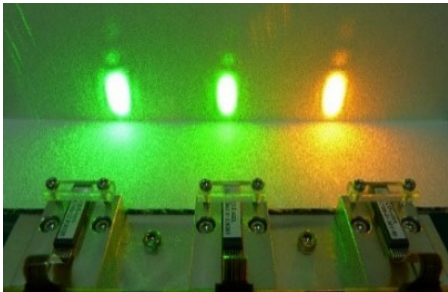
- Received steady orders from the Israeli company for use in precision machining lasers as in the previous year.
- Increased orders from Europe for use in semiconductor inspection equipment and measurement systems.
- Increased orders from China for use in sensing applications.
- As a result of the above, sales in FY2021-Q1 increased by 44% year-over-year to 49 million yen.



Compact Visible Lasers : Sales in FY2021-Q1

32 million JPY sales, increased by 60% YOY.

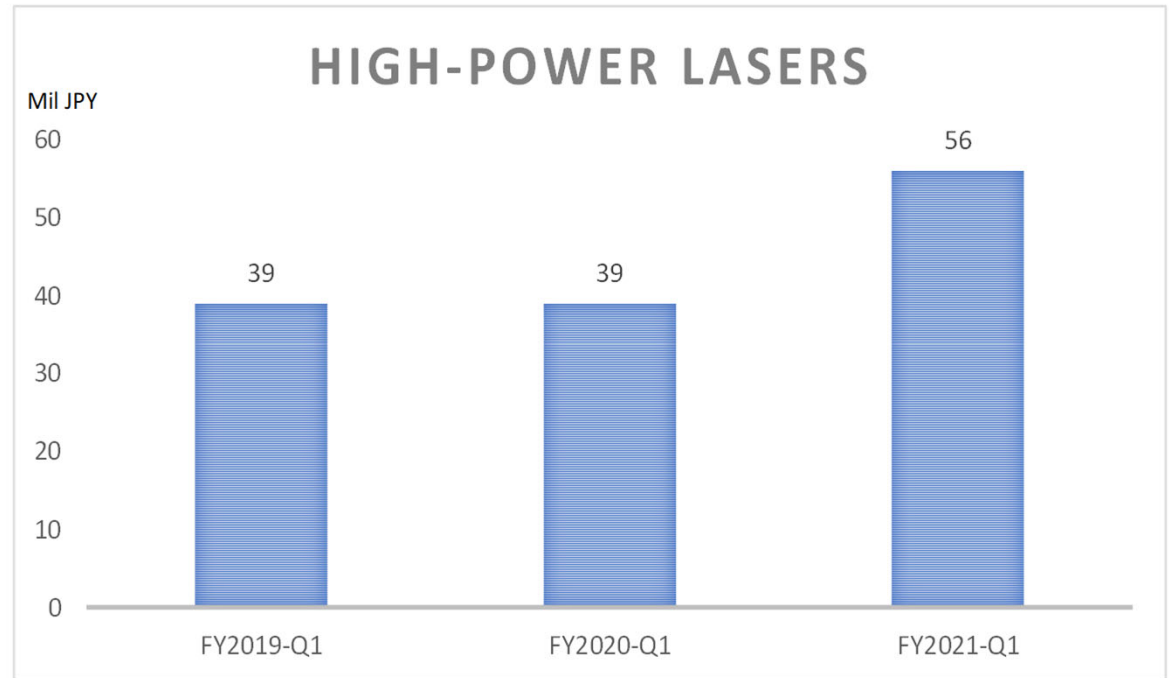
- Increased orders since the Chinese customer with the headquarter in the US is starting mass production of new biomedical equipment.
- As a result of the above, sales in FY2021-Q1 increased by 60% year-over-year to 32 million yen.



High-Power Lasers : Sales in FY2021-Q1

56 million JPY sales, increased by 44% YOY.

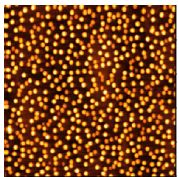
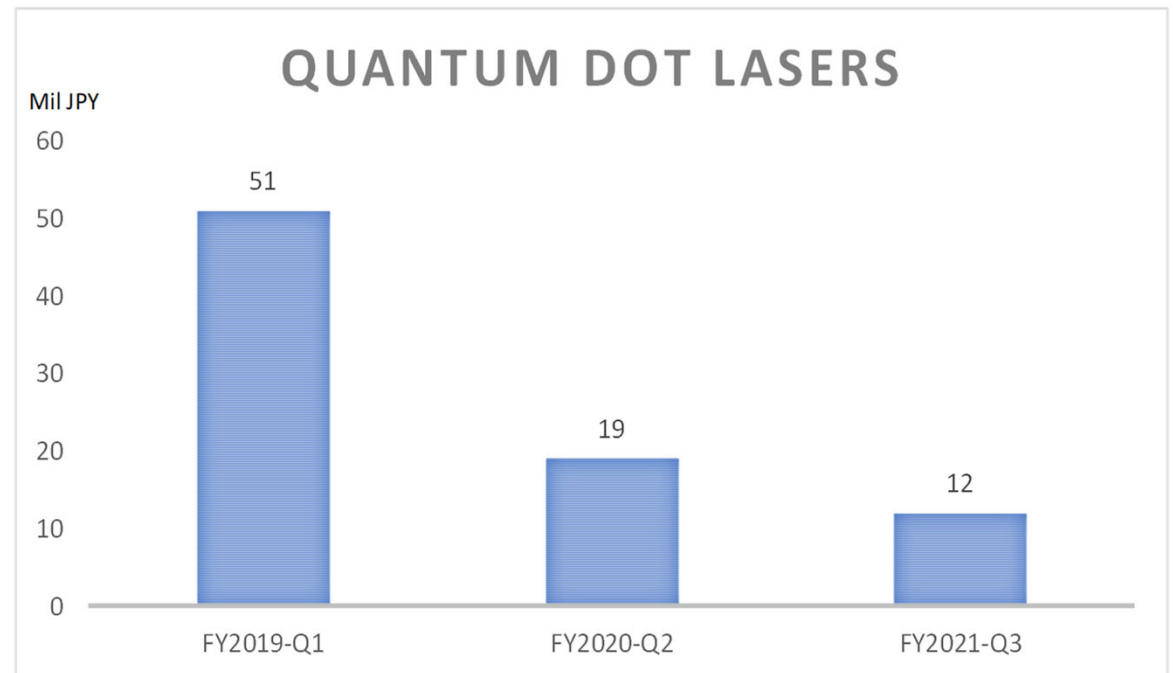
- Increased orders for use in sensing and projectors in China.
- Increased orders for semiconductor factories.
- Newly approved for mass production by four customers.
- As a result of the above, sales in FY2021-Q1 increased by 44% year-over-year to 56 million yen.



Quantum Dot Lasers^{*1} : Sales in FY2021-Q1

12 million JPY sales, decreased by 37% YOY.

- Development projects on silicon photonics with quantum dot lasers are progressing under collaboration with two LiDAR-related and five optical interconnect-related customers.
- Received regular orders from LiDAR-related customers.
- Orders for optical interconnect postponed to 2nd half of this fiscal year.
- As a result of the above, sales in FY2021-Q1 decreased by 37% year-over-year to 12 million yen.

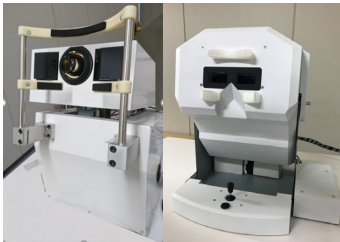


NRE : Sales in FY2021-Q1

55 million JPY sales.

- Received the development consignment from medical, eyeglass, and university hospital-related customers with NRE (Non-Recurring Engineering) fee to realize the prototypes of
 - ✓ Laser scanning fundus photography * 1
 - ✓ Refractive power measurement * 2based on the laser retinal projection technology.

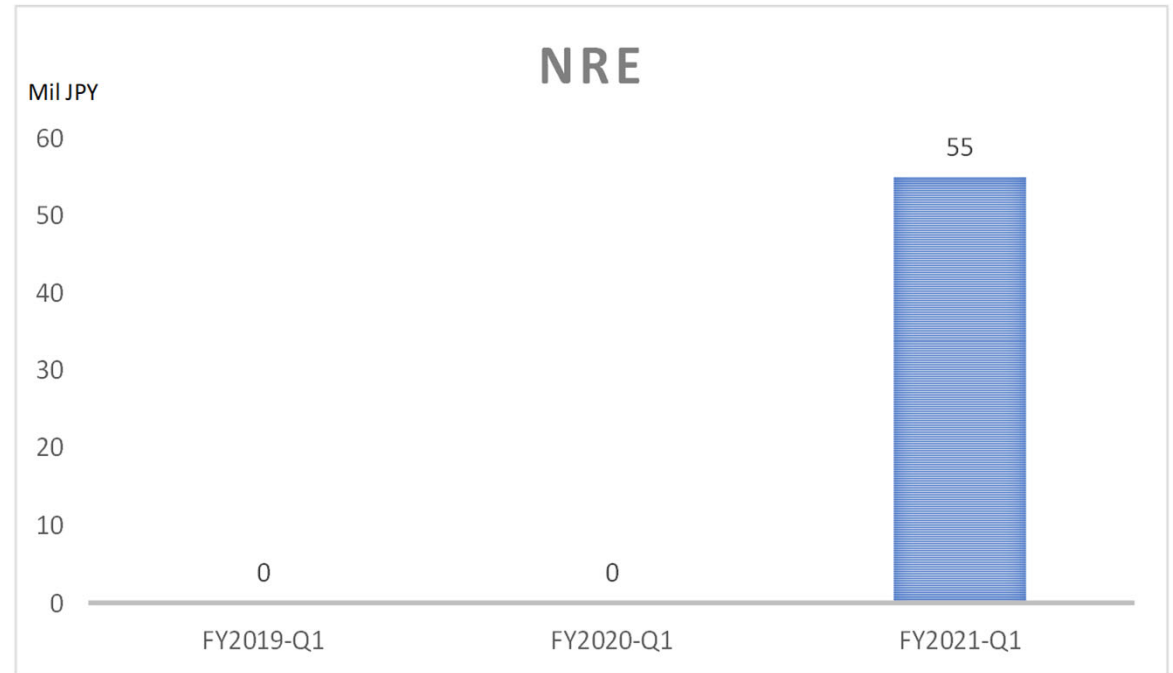
- As a result of the above, sales in FY2021-Q1 were 55 million yen.



Terminology

* 1 A prototype for laser scanning fundus photography enables fundus image acquisition at low cost and easy operability.

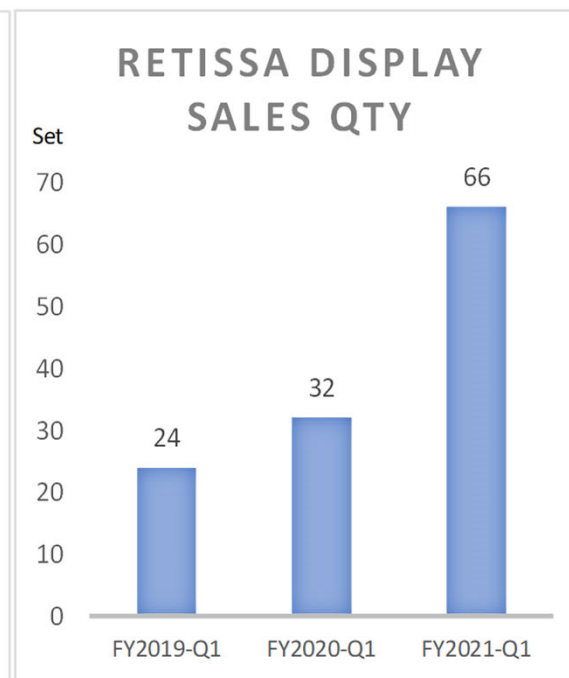
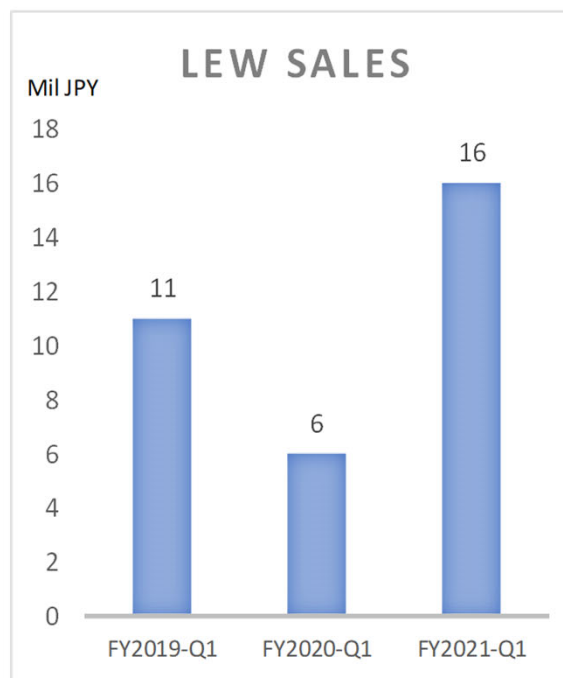
* 2 A prototype for refractive power measurement allows you to subjectively and objectively inspect the refractive power of your eyes.



Laser Eyewear (LEW) : Sales in FY2021-Q1

16 million JPY sales, increased by 167% YOY.

- Shipment of LEWs to 49 branches of a financial institution drove sales.
- Shipment to domestic and overseas agents, including accessory cameras for their field testing.
- As a result of the above, sales in FY2021-Q1 increased by 167% year-over-year to 16 million yen.



Quarterly Comparison and Progress against Full-Year Forecast

Sales increased compared to the forecast for FY2021-Q1 . However, losses increased due to increased expenses.

Financial Forecast

(Million JPY)	FY2021 Forecast	FY2020 Result	YOY
Sales	1,260	895	+41% (+ 365)
Operating Loss	△533	△654	+121
Ordinary Loss	△505	△707	+202
Net Loss	△508	△879	+370

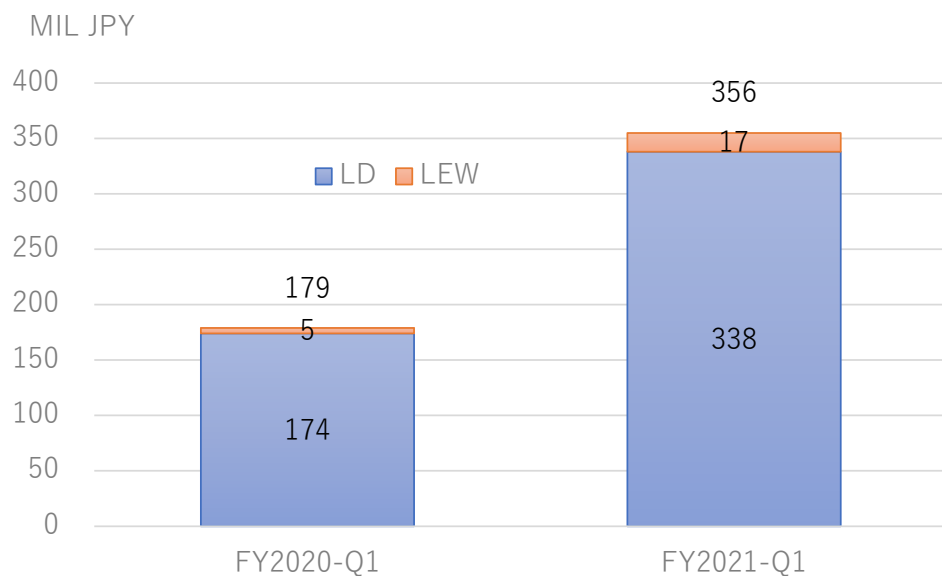
Quarterly Comparison and Progress against Forecast

(Million JPY)	FY2021 Q1 Result	FY2021 Q1 Forecast	Disparity vs Forecast	FY2021 Forecast	Progress Rate
Sales	222	206	+ 8% (+ 16)	1,260	18%
Operating Loss	△200	△194	△6	△533	38%
Ordinary Loss	△202	△192	△9	△505	40%
(Quarterly) Net Loss	△206	△193	△12	△508	41%

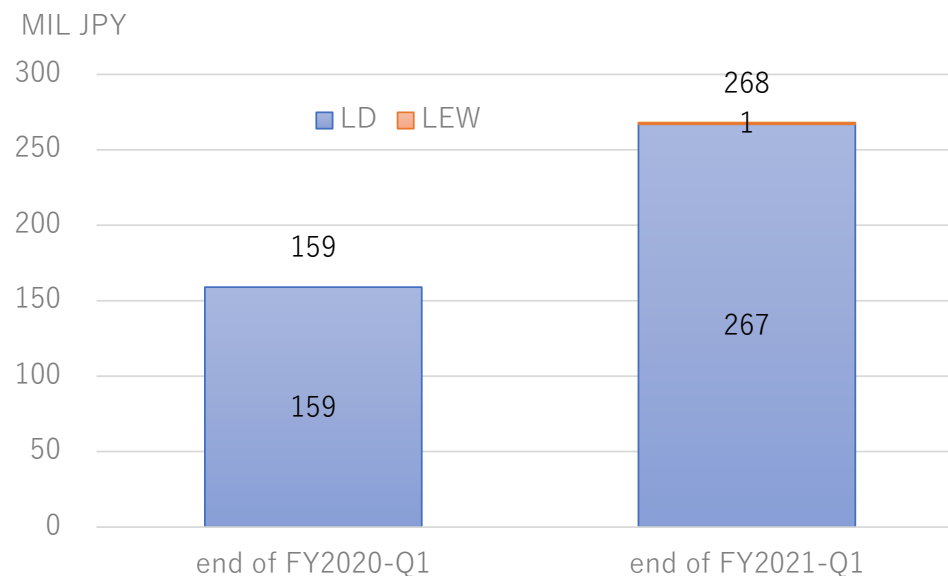
Order Status

Orders received in the FY2021-Q1 increased by 99% YOY to 356 million yen, and the order balance at the end of the FY2021-Q1 increased by 69% YOY to 268 million yen.

Received Order Amount



Order Balance



As of the end of March 2021, the order balance was 135 million yen, and the order amount for the FY2021-Q1 was 356 million yen. The total of 491 million yen is 39% of the sales forecast of 1,260 million yen.

02



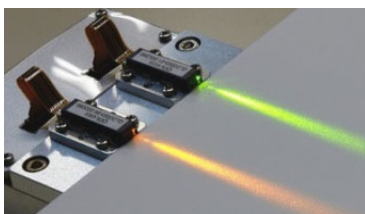
Semiconductor Laser Devices

Solid Earnings Base and High Growth Potential
with Global Laser Market Expansion

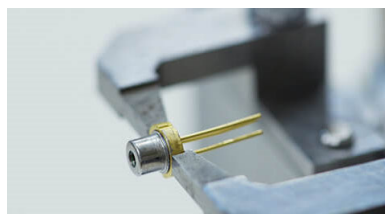
Our Major Laser Device Businesses Products

Compact visible lasers

Product
image



High power laser



DFB laser



Quantum dot laser



Use

- Biosensor, fluorescence microscope, etc.
- Ex. flow cytometers, cell sorters, and STED microscopes.

- Machine vision, sensors, spirit level, short-range LiDAR, 3D measurement, particle counters

- Seed light of fiber lasers for precision processing, gas sensing, etc.
- Aviation LiDAR, etc.

- Optical communication
- Silicon photonics for optical interconnect in data centers, 5 G base stations, HPC, automobiles, and LiDAR in robotics, drone, security, self-driving cars.

Features

- Miniature size, low power consumption, stability, short pulse generation, and high-speed modulation, etc.

- High power Fabry Perot laser
- Provide products and services by meeting the customers' needs, such as small-volume orders and service provision in Japanese

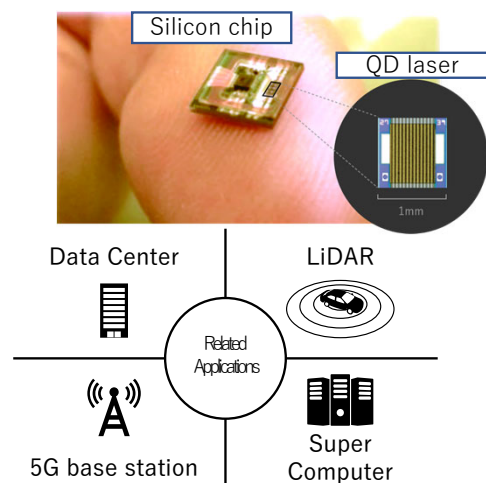
- Wavelength stability, high-speed, ultrashort pulse, modulation characteristics, robustness, and reliability.
- Higher quality of beam, more compact and lightweight size, higher photoelectric conversion efficiency, and longer life compared to existing solid-state lasers

- Quantum dots are used for the active layer (light-emitting part) of semiconductor lasers.
- Excellent temperature stability, high-temperature resistance, and low noise performance compared to existing semiconductor lasers.

Laser Devices with Our Core Technology

Evolution of Silicon Circuit

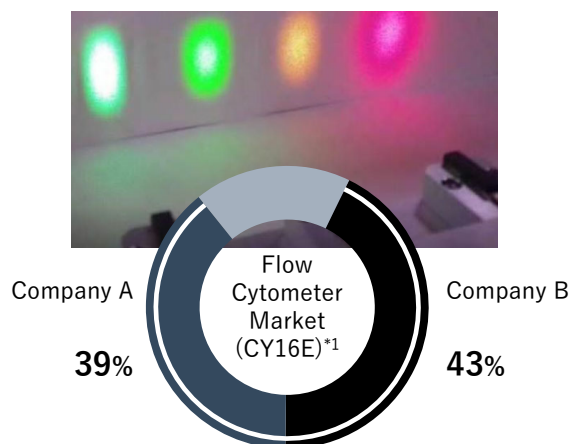
- Silicon electronic and optical Integrated circuit is now a reality owing to quantum dot lasers with stable performance even in high temperatures over 100 °C.
- See a photo of a commercialized fingertip-sized silicon chip as 100Gbps optical transceiver with quantum dot lasers as light sources



- Cumulative sales of silicon photonics chips: **14,979 units**^{*2}

Evolution of Sensing

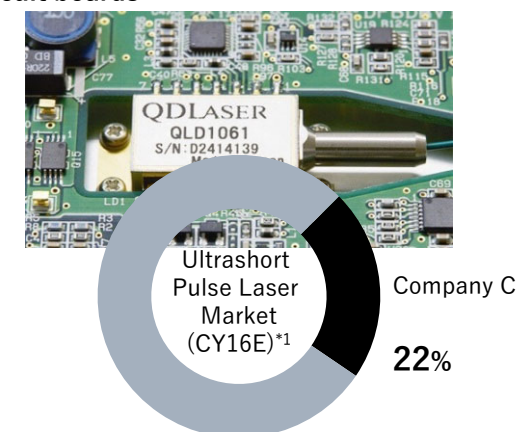
- Unique lasers with various wavelengths are applied to a variety of technologies such as biosensing equipment (i.e. flow cytometers, etc.) machine vision, and facial recognition, etc.



- A certified supplier for Top 2 companies that occupy **82.7%** of Flow Cytometer **Global Market** (JPY 77 bn^{*1}/ approx. USD 73mn)
- Cumulative sales of laser devices for bioinstrumentation such as flow cytometers: **3,414 units**^{*3}

Evolution of Laser Processing

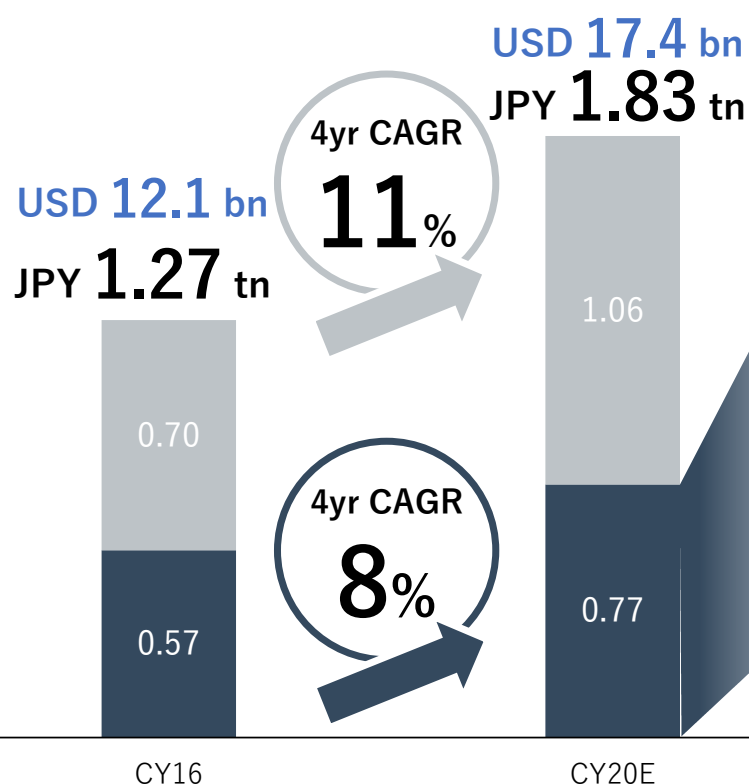
- Ultrashort pulse (10 ps) lasers enable unheated high-precision processing
- Currently used to process smartphone electronic circuit boards



- A certified supplier for the second largest company that occupies **22%** of Ultrashort Pulse Laser **Global Market** (JPY 46.6 bn^{*1} / approx. USD 424mn)
- Expanding into Airplane LiDAR
- Cumulative sales of ultrashort pulse laser devices: **5,959 units**^{*4}

The Semiconductor Laser Market Continues to Expand, Even for Existing Applications Alone Achieved 20% Increase of the Certification Number (Customer X Product) in FY2020 from 39 to 47

Semiconductor laser market growth for existing applications*1



Expand presence in the target market via new product development

Quantum-Dot Laser in Silicon Circuit :

- Interconnect(368M\$) : Data centers, 5 G base stations, HPC, Automobiles
- LiDAR(28M\$) : Robotics, Drone, Security, and Self-driving cars

Laser Processing

- Fiber lasers for micromachining(11M\$) : Composite electronic circuit boards, glass, ceramics, semiconductors, etc.
- LiDAR(3M\$) : Aircrafts, meteorological and terrain observation

Sensing

- Biosensing(64M\$): Flow cytometer, cell sorter, and various microscopes
- Ubiquitous sensor(339M\$): train, automatic transport device, level sensor, particle counter

* Numbers are our accessible market forecast in FY2025

Measures to achieve 20% increase of Certification Number

- New product development based on industry trends and market analysis
- Device customization for adding value to customer products
- Proposal activities to customers by market trends and needs
- Issuance of White Paper on new product/technology development

Tangible Silicon Photonics Market as Electronic / Optical Integrated Circuit Technology Platform

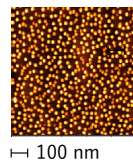
Customizing quantum dot lasers for Japan/US silicon photonics vendors.

Starting mass production in 2021.

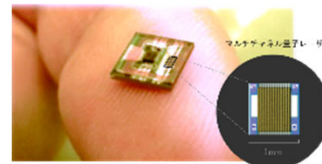
Development and production

- 2010**
World's first mass production of quantum dot laser for optical communication
- 2012**
Started development of quantum dot laser for silicon photonics
- 2017**
Established mass production system of quantum dot lasers for silicon photonics (supplied to AIO core)
- 2019**
Our products installed in the "Ultra-thin connector integrated active optical module (I-PEX EOB)" developed by I-PEX
- 2021**
Promoting joint development with silicon photonics vendors around the world. Starting mass production for chip-to-chip optical interconnect and Lidar during 2021 to 2023.

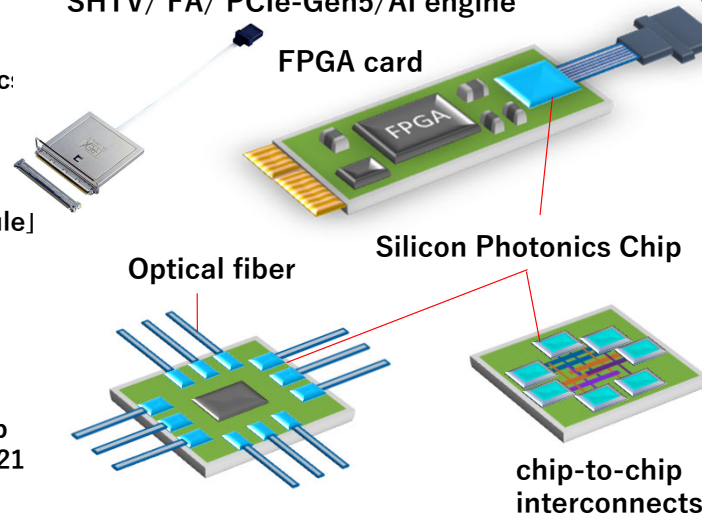
Quantum Dots



100Gbps optical transceiver with quantum dot lasers as light sources

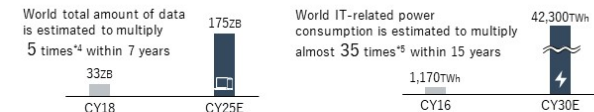


Optical Connector(EOM,COP) : 8K-SHTV/ FA/ PCIe-Gen5/AI engine



Increased data and power consumption to be solved by Silicon Photonics

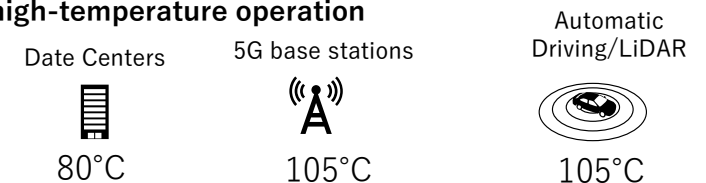
Problem
Increasing demand for global data in turn creates a global issue of increasing power consumption



Solution
Silicon photonics with quantum dot lasers mounted on silicon chips enable dramatic improvement in semiconductor performance⁶



Huge information processing application that requires high-temperature operation



Semiconductor Laser Devices

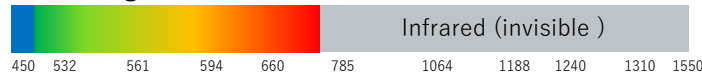
Our Competitive Advantages / Barriers to Entry

Laser Device

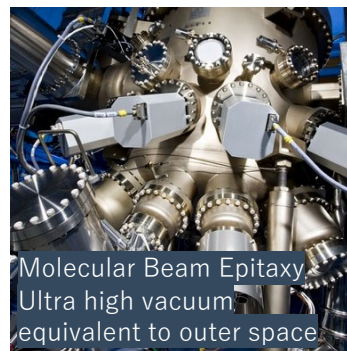
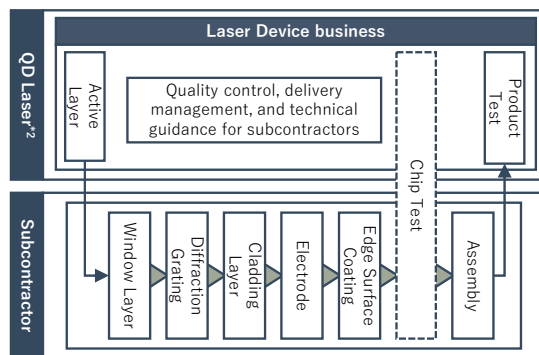
Business Model

- **The only fabless company in the semiconductor laser industry**
 - Flexible manufacturing scale of several to tens of millions units
 - High marginal profit ratio of over 50% on average*¹ (made fixed costs into variable costs)
 - Through mass production and diverse product offering, beyond breakeven point

- **Any wavelengths of lasers**
Wavelengths of lasers we offer (nm)

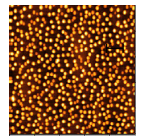


- **High level of freedom in creating new business, fields and products**



Core Competence : Quantum Dot Lasers

- **Atomic-level precision epitaxy technology (proprietary)**
 - Growth control by 0.1 second
 - Extract the best recipes from over 100,000 recipes
 - The only one to succeed in mass production of quantum dot lasers, thanks to over 20 years of accumulated technology

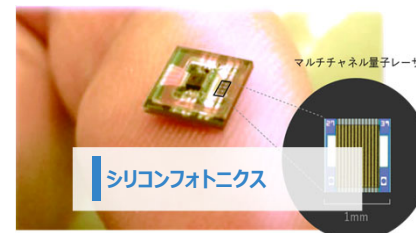


100 nm

image of quantum dot by atomic force microscope

- **Capable of operating in harsh environments of over 100°C and under high density packaging**
 - Optoelectronic integrated circuit
 - In-vehicle devices

- **New potential market created by quantum dot lasers**
 - Chip-to-chip optical communication
 - LiDAR
 - Quantum cryptography



03



Laser Retinal Projection

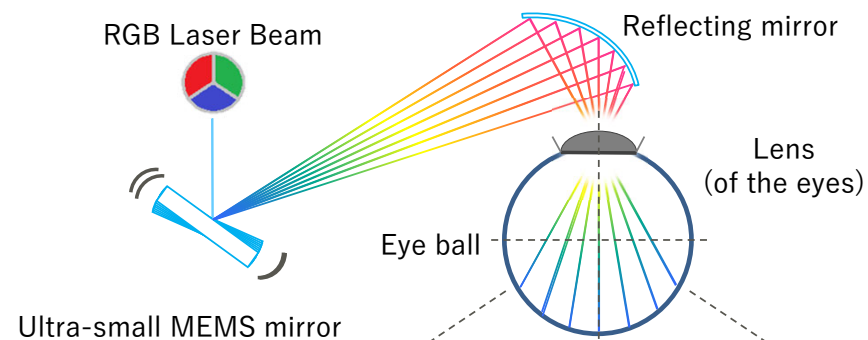
World's First Commercialization of Laser Retinal Projection Eyewear

VISIRIUM TECHNOLOGY®

Unique Laser Technology bringing Innovation to Vision

Laser Device

Laser Eyewear

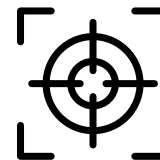


Direct Image Projection onto Retina



Visual experience independent of the condition of your cornea or lens

You can recognize an image clearly even with myopia, hyperopia, astigmatism, or ametropia.



Free focus

The focus of both the landscape you see with the naked eye and the image projected by our glasses can be superimposed on the retina. This is a unique feature not found in other AR glasses.



Enables vision even in the periphery of the retina^{*1}

Since the image is in focus even over a wide area of the retina, we expect that it can also be effective for patients with retinopathy.

^{*1}: At major airline company and National University Corporation Tsukuba University of Technology, a systematic demonstration study is currently underway. There are individual differences.

RETISSA® series product development status Medical

Medical device model sales started.

Sales increase for both consumer and medical models



Corrected vision: 0.8

- Refractive power: 0.8 corrected vision without eyeglasses in the power range of -11D*¹ (high myopia) to +6D (medium high hyperopia) *²

Sales strategy of this term

- New frame to improve wearing alignment and stability
- Accessory camera connected to the frame for enhanced functionality
- Proposals of use cases for companies
- Overseas sales, including US, China, and South Korea.



Controlled medical device (Controlled medical devices requiring special maintenance)*³

- Used to correct vision in patients whose vision is impaired by unjustified astigmatism (patients who are unable to achieve adequate vision using existing eyeglasses or contact lenses)
- Expected to (1) correct visual acuity, (2) improve reading speed, and (3) improve reading acuity

Sales strategy of this term

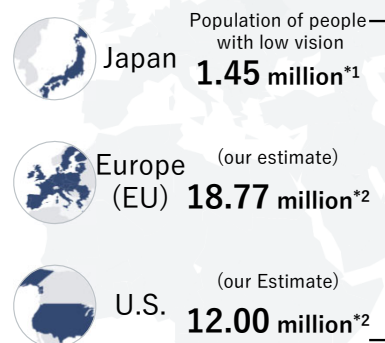
- Sales collaboration with Santen Pharmaceutical and Seed. • Efforts to reduce the burden on purchasers: Healthcare subsidy, medical insurance, tax deduction, etc.

Low Vision Aids: Total Addressable Market (※Anterior eye disease patients only :
Ametropia and corneal opacity)

JPY 900 bn (USD 8.6 bn) Market in Japan, U.S. and Europe

Vision to Expand into Other Countries like China further behind in Ophthalmic Technologies

Low Vision Market

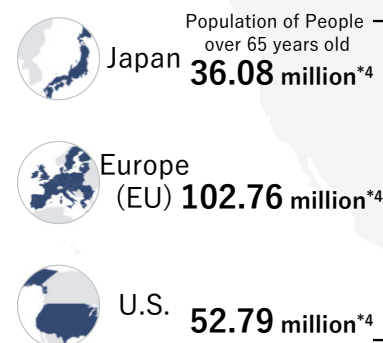


Estimated percentage of applicability (our estimate)^{*3} × **11%** × Product Price per Unit (our assumption)^{*6} × **JPY 200k (USD 1.9k)**

Total market size of advanced countries (our estimate)

JPY 708.7 bn
(USD 6.7 bn)

Senior Citizens Market



Estimated percentage of applicability (our estimate)^{*5} × **1%** × Product Price per Unit (our assumption)^{*6} × **JPY 100k (USD 950)**

Total market size of advanced countries (our estimate)

JPY 191.7 bn
(USD 1.8 bn)

JPY 900 bn (USD 8.6 bn)

*1: Japan Ophthalmologists Association "Social costs of visual impairment in Japan"

*2: Calculated by multiplying the ratio of persons with low vision sourced from WHO "Visual Impairment and Blindness 2010" by the current population in each region (Europe: Eurostat "Population on 1 January", U.S.: United States Census Bureau "Annual Estimates of the Resident Population for the United States")

*3: According to the survey by Santen Pharmaceuticals, the number of keratoconus patients in Japan is estimated to be 60,000 to 120,000; also, as the data on p.39 shows that the prevalence per 100,000 people of keratoconus is almost the same as that of corneal opacity, it is assumed that the number of corneal opacity patients in Japan is similar to that of keratoconus patients. Assuming the number of patients suffering from each of these diseases to be an intermediate value of 80,000, the total is calculated to be 160,000; then, we apply the estimated percentage of applicability of 11%, calculated by dividing 160,000 by the population of persons with low vision (1,450,000), to each country's population of low vision persons. This percentage only takes into account anterior eye diseases; therefore, if our product is also effective for patients with retinal disease, the estimated percentage of applicability is expected to increase.

*4: Assuming that all the elderly aged 65 and over use near-sighted, presbyopic or bifocal glasses, we can estimate that each country's population aged 65 and over can be the potential population of persons with gap vision (Japan: Statistics Bureau of Japan "Population Estimates May 2020", EU: Eurostat "Population on 1 January by broad age group and sex", U.S.: United States Census Bureau "Population by Age and Sex: 2019").

*5: Due to the products' similarity in characteristics to hearing aids (used by the elderly on a daily basis, wearable equipment, sold at glasses stores, etc.), the hearing aid market is used as a reference to estimate the percentage of applicability. Given that the number of hearing aids shipped in Japan in 2017 numbered 562,747 (Japan Hearing Instruments Manufacturers Association "2018 Shipment Volume of Hearing Aids"), this number divided by the number of elderly people in Japan will give us an estimate that 1.7% of the elderly purchased a hearing aid, which we then adjust conservatively to assume an estimated percentage of applicability of 1.0% which can then be applied to each country's population of gap vision persons.

*6: Expected price per unit after the mass production is realized.

04



Further Growth Upside Expected

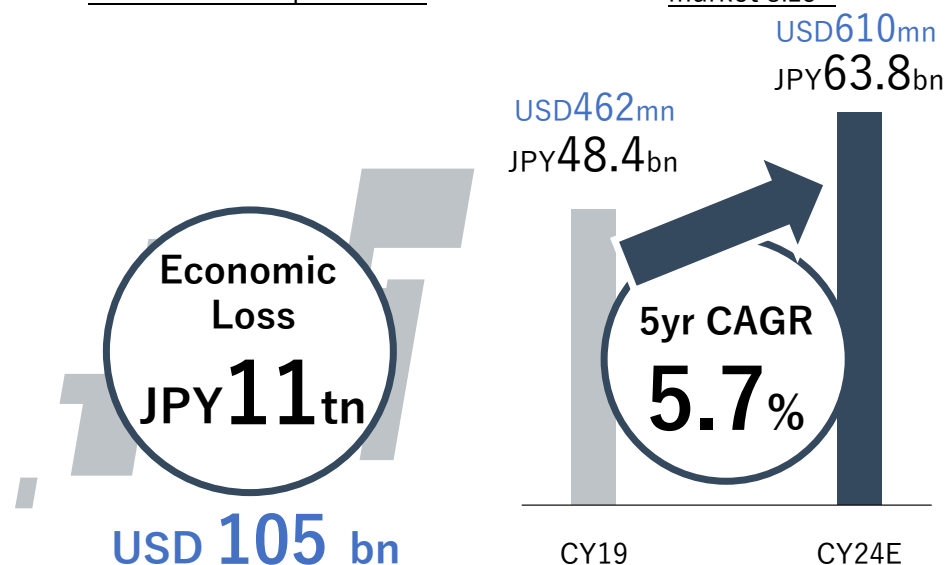
New Optometry Prototypes.

Date platform for vision health care in the concept stage.

Large Growth Potential in Optometry Market Utilizing Laser Retinal Projection Technology, Developed New Optometry Prototypes and Working with Partners to Launch

Estimated economic loss in Japan
due to visual impairment*1

Fundus photography equipment
market size*2



Conventional
optometry equipment

Large / expensive /
Requires medical staff



Medical resources are available
mainly in urban areas.
Given the time and the financial cost,
people miss the chance to go to their optometrist
and end up detecting their glaucoma late

New optometry equipment

Small / low cost / short time /
self-examination possible

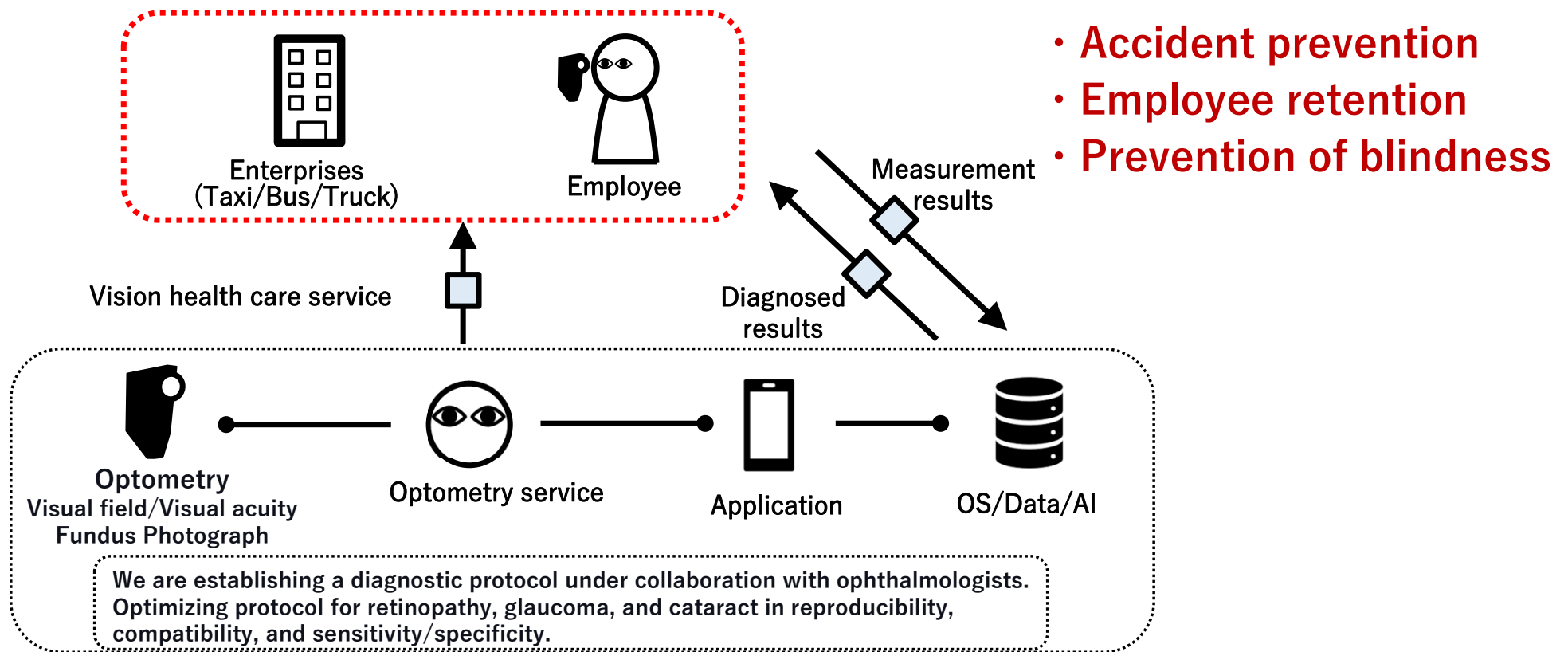


Enables an environment where anyone
can easily examine their eyes,
increasing the early detection rate of glaucoma
and expecting to extend
the healthy lifespan of the eye

*1: Japan Ophthalmologists Association (2009) "Economic Cost of Visual Impairment in Japan" and "Prevalence of Visual Impairment in the Adult Japanese Population by Cause and Severity and Future Projections"
Economic cost = Direct health costs + Other financial costs + monetary converted number of loss of well-being from visual impairment (measured in disability-adjusted life years (DALYs))
*2: TechNavio (2020) "Global Ophthalmic Diagnostic Devices MARKET 2020-2024" Converted at an exchange rate of JPY/USD = 110 yen
*3: The approximate measurement time of the Goldmann perimeter and Humphrey perimeter, which are typical perimeters in conventional perimeter measurement.

Date platform for vision health care, in the concept stage

QDLaser is developing a service to provide simple optometry diagnostics for companies where eyes are critical (driving, for example). The algorithm judges fundus condition based on the optometry data acquired by our retinal imaging equipment. With symptoms observed, the system recommends stopping driving and seeing an ophthalmologist.



Expected Growth Potential in Mid-Long Term

01 Through R&D of various laser technologies and stable profits from laser device business, strengthen business base for dramatic future growth.

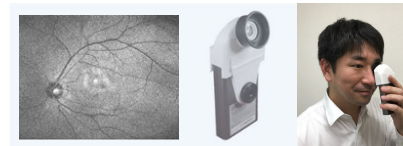
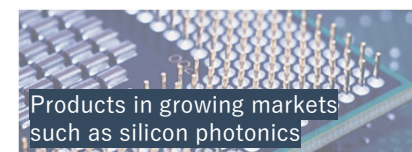


02 Establish mass production and sales channels of consumer / medical eyewear
Make laser eyewear business the growth driver in the short to medium term



03

In the mid to long term, in addition to the laser eyewear business, plan to expand sales of optometers and silicon photonics.



Present

Future

*1: Chart for illustration purposes only

05



QD LASER

ESG Initiatives

Working on business areas directly
linked to solving social issues

⇒ "With my eyes" project

Business Development from an ESG Perspective

Laser Device

Laser Eyewear

Social

Environmental

Governance

Estimated economic cost in Japan due to visual impairment in 2030*1
USD105bn
JPY11tn

Global prevalence of people with low vision*2

250mn

Estimated number of glaucoma patients in Japan*3

4mn

- World's first laser retinal projection technology for low vision aids
- Through the spread of laser eyewear, provide visual support for the elderly
- Through the spread of more affordable optometers, contribute to the early detection of various eye diseases including glaucoma, etc.
- Employment support for people with low vision

Energy savings from semiconductors with silicon photonics*4
90%

- Silicon photonics with quantum dot lasers improve semiconductor performance dramatically

*1: Japan Ophthalmologists Association "Economic Cost of Visual Impairment in Japan" and "Prevalence of Visual Impairment in the Adult Japanese Population by Cause and Severity and Future Projections"
Economic cost = Direct health costs + Other financial costs + monetary converted number of loss of well-being from visual impairment (measured in disability-adjusted life years (DALYs))

*2: WHO "GLOBAL DATA ON VISUAL IMPAIRMENTS 2010"

*3: Santen Pharmaceutical "Annual Report 2017"

*4: Target numbers in "Development of Technologies for Super Energy-Efficient Optical Electronics Implementation Systems" Promoted by METI, The Institute of Electronics, Information and Communication Engineers "Opt-Electronics Packaging Technology for Silicon Photonics"

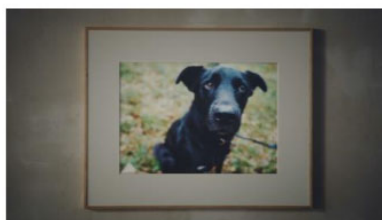
With My Eyes project

#1 Photographs by low vision people.

<https://www.youtube.com/watch?v=p5blfs94Oys>

#2 Let's go and see the invisible world.

https://www.youtube.com/watch?v=ZM52dax_5yc



Company Profile

Spin-off Venture from Fujitsu

Tier 1 Medical Companies such as Nikon/Santen joined as Shareholders

Company Name	QD Laser, Inc.
Foundation	April 24, 2006
Fiscal year-ended	March 31
Representative	Mitsuru Sugawara, President and CEO
Location	Headquarter: 1-1 Minamiwatarida-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa
Number of Persons*1	60
Business	Planning, design, development, production and sales of semiconductor laser and its application products
Licenses	<ul style="list-style-type: none">• Class II Marketing License for Medical Devices• Registration of medical equipment manufacturer• ISO 9001• EN ISO 13485



**Science and Technology
Award from the Minister
of MEXT**

**Prime Minister's Honorary
Award for Achievement in
Industry-Academia-
Governmental Collaboration**

- Graduated from The University of Tokyo;
Doctor of Engineering
- 1984: Graduated with a master's degree in Physical
Engineering from the Department of Applied Physics,
School of Engineering, University of Tokyo; joined
Fujitsu Laboratory Ltd.
- 1995: Assumed the role of Senior Researcher at Optical
Semiconductor Device Laboratory, Fujitsu Laboratory
Ltd.; obtained degree in Eng. from The University of
Tokyo
- 2004: Assumed the role of non-tenured professor at the
Institute of Industrial Science, University of Tokyo
- 2005: Assumed the role of Deputy Head of
Nanotechnology Research Center, Fujitsu Laboratory
Ltd.
- 2006: Launched QD Laser Inc.; assumed the role of
President and CEO

*1: As of June 30, 2021. Including 1 employee and officer, 11 dispatched employees.

Caution When Handling This Document

- The materials and information provided in this presentation include forward-looking statements.
- These statements are based on expectations, forecasts and risk assumptions as of this presentation's publishing, and contain uncertainties that could lead to results that are substantially different from these statements.
- These risks and uncertainties are present in any transaction, and are applicable to general industry and market conditions as well as general domestic and international economic conditions, including fluctuations in interest rates and currency exchange rates.
- Note that QD Laser does not bear any duty to update or revise forward-looking statements provided in this document, even if new information comes to light or future events occur.