



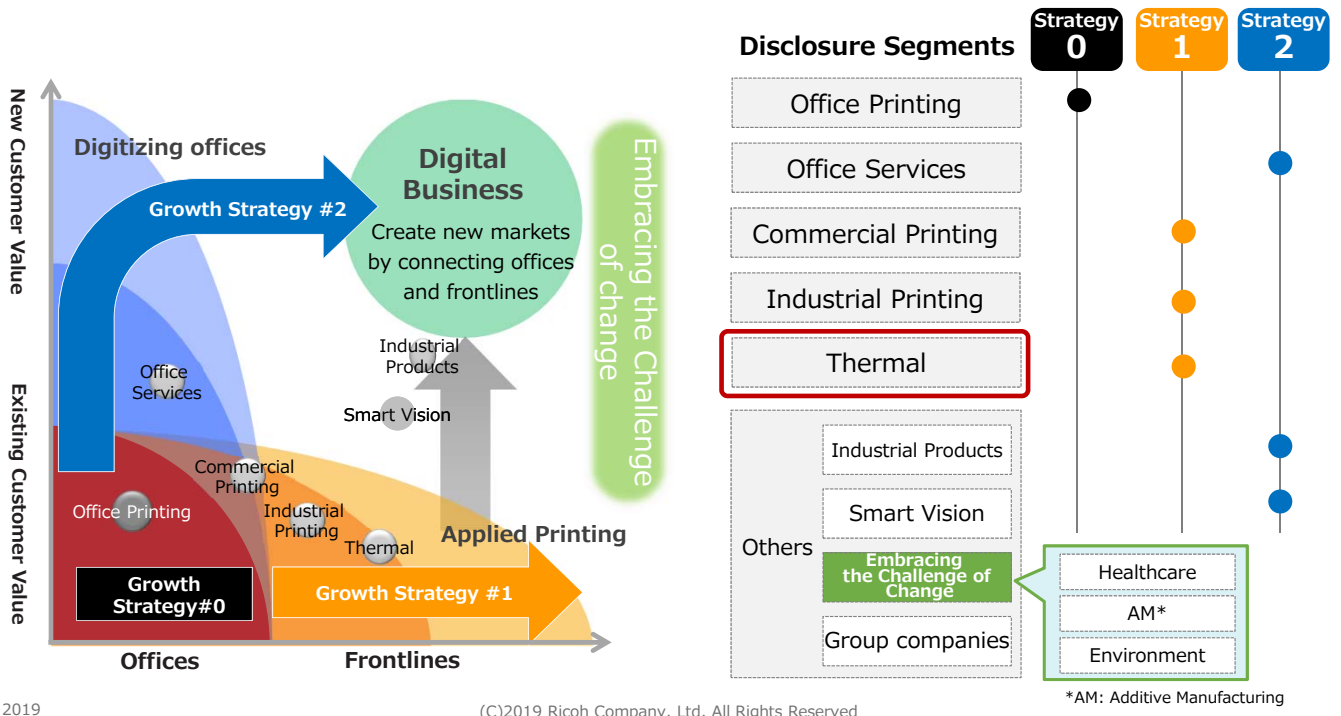
**Thermal
Business**

April 11, 2019

**Keiichi Shiokawa
General Manager of
IMS Business Group
Ricoh Company, Ltd.**

- Hello, I'm Keiichi Shiokawa. I manage the IMS Business Group.

Growth Strategy "RICOH Ignite"

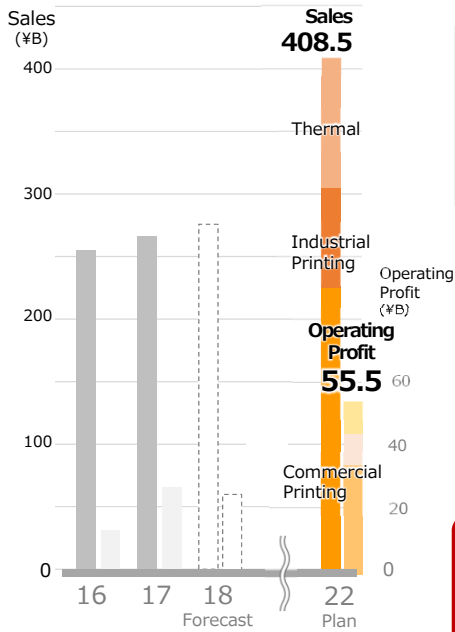


April 11, 2019

(C)2019 Ricoh Company, Ltd. All Rights Reserved

*AM: Additive Manufacturing

- Ricoh has long supplied thermal media, and our operations evolved to the extent that we are now our own business category.
- We are positioned in Growth Strategy #1, which focuses on printing. Our business primarily serves frontline customers.



Growth Strategy #1 toward FY2022

Expand Commercial Printing business earnings and invest heavily to drive Industrial Printing business growth

Commercial Printing: Bolster solutions to cater to various market needs in core, enterprise, commercial, and other printing areas, supporting customers and printing businesses and growing with customers

Industrial Printing: Expand our customer value proposition and reduce environmental impact by materializing our digital micro factory concept, opening up new vistas for industrial printing "

Thermal: Leverage competitive edge in existing businesses to maximize earnings while launching new operations to expand our business and increase the operating margin to more than 10%

- Our business goals toward fiscal 2022 are to expand earnings and help propel Ricoh's performance.
- We will contribute to profits through existing and new businesses.

Thermal Business Overview (Products)

RICOH
imagine. change.

Thermal Business

Offering media products and systems that print barcodes and other variable information to identify individual items for retailing, logistics, and manufacturing

Thermal paper

Thermal labels for outputting variable information color on scale and barcode printers

Main applications



Food portion labels



Shipping labels



Medical wristbands



Lottery and other tickets

Thermal Transfer ribbons

Barcode printer ink ribbons that print variable information on paper and film

Main applications



Process control labels



Clothing care labels



Product control labels



Date stamps

Laser solutions

Rewritable laser system

Can repeatedly print and erase variable information

Main applications



Returnable box



Inter-plant transport tray



Medicine delivery tray in hospital

Fast laser printing system

An on-demand setup for printing at up to 5 meters a second

Main applications



Customized labels for plastic beverage bottles (printing speeds of 3 to 5 meters per second)

April 11, 2019

(C)2019 Ricoh Company, Ltd. All Rights Reserved

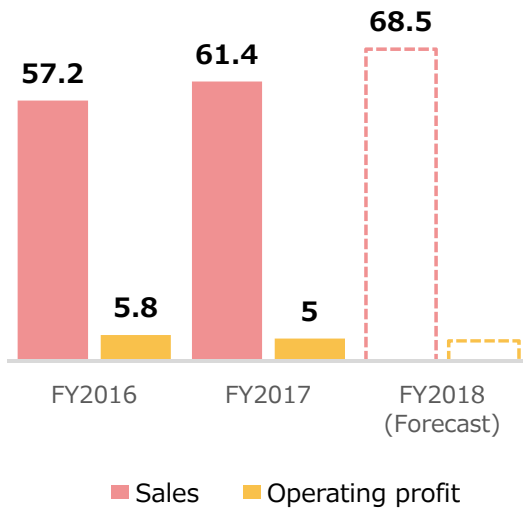
3

- This page presents the key offerings of the Thermal Business. We supply media for printing barcodes and other variable information to identify individual items for retailing, logistics, and manufacturing.
- Our business began providing consumables in the 1980s, notably for Ricoh's facsimile machines. We also provided thermal transfer ribbons for Japanese word processors. We thereafter cultivated opportunities in automatic recognition and barcode printing. Today, all of our sales are to external customers, mainly on an OEM basis.
- We have three main business categories.
- The first is thermal paper, which we have offered for years. Diverse applications include food portion labels in supermarkets and shipping labels. Other uses are for medical wristbands and other tickets.
- The second main business is thermal transfer ribbons. These are used in factory barcode printers. Key applications are process control labels in automaking and electronic parts and clothing care labels.
- Our third business is laser solutions, which we recently started marketing. The two focuses of this business are a rewritable laser system and a fast laser printing system.
- While thermal paper and thermal transfer ribbons can be used just once, our rewritable laser system employs a thermal media that can be rewritten and erased around 1,000 times. The main applications are control labels, notably for returnable boxes in logistics and inter-plant transport trays. We are continuing to market this setup with a laser coloring system.
- The key feature of our fast laser printing system is that it combines media and a system to deliver high-speed, on-demand printing of information. It can print up to 5 meters per second. The speeds on lines for plastic and other bottles are 3 to 5 meters per second. I find the system fascinating because there was likely nothing else like it for on-demand printing speed when it came along.

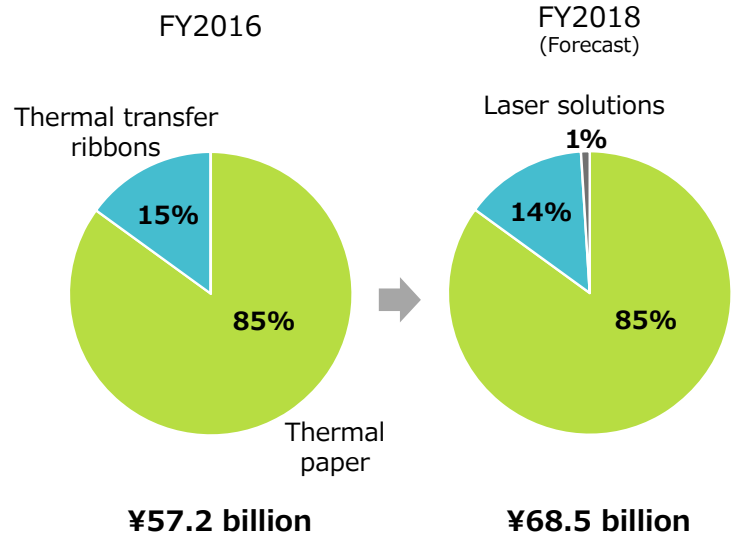
Thermal Business Overview (Results)

Results

(Billions of yen)



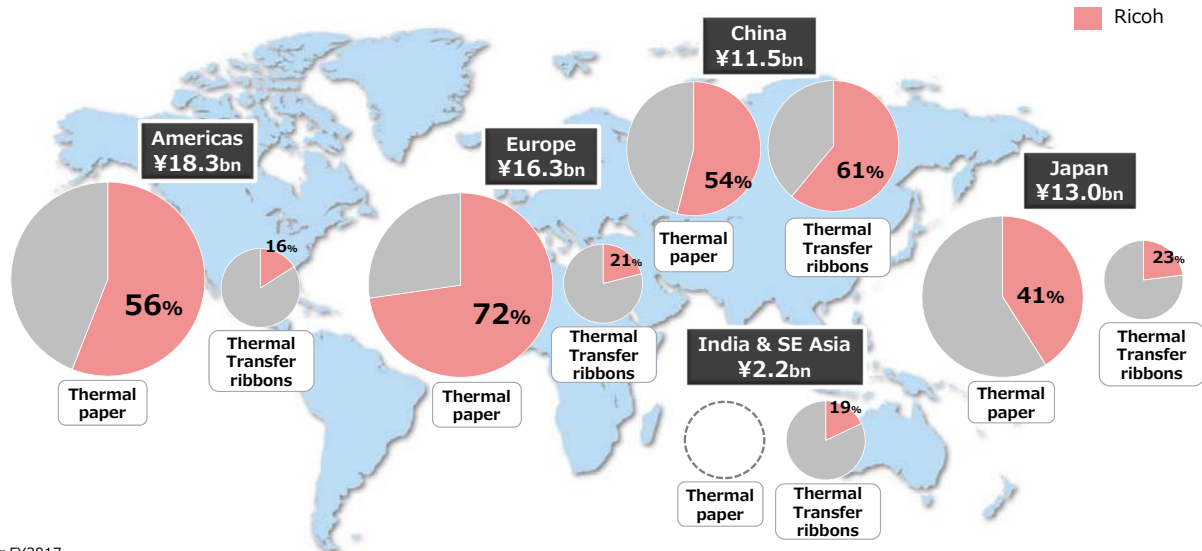
Sales composition ratios by business



- Here, you see results for the Thermal Business.
- Sales trended up over the past three years to just under 70 billion yen in FY2018, representing double-digit growth.
- We have struggled somewhat on the operating profit, mainly because of higher raw materials costs.
- The Chinese government tightened environmental laws and ordinances for raw materials used in chemicals in recent years, leading to operational shutdowns and destabilizing supplies, driving materials costs up.
- Our near-term responses in fiscal 2018 were to reflect higher costs in our pricing or lower our costs. These efforts should help us bolster profitability in FY2019.
- Note that thermal paper accounts for 85% of sales in this business. This is because of the massive scale of customers' distribution and logistics sites. Sales contributions from laser solutions are in early stages there, and should expand in the years ahead.

Market Share

Ricoh gains 50% share in global thermal paper market, and 30% in thermal transfer ribbons. The key thermal paper markets are the Americas, Europe, China, and Japan. The prime thermal transfer ribbon markets are China, India, and ASEAN.



Note: Results for FY2017

Thermal paper: Market share based on Ricoh survey, excluding for point-of-sale cash registers and fax applications.

Transfer ribbons: Based on Ricoh survey, excluding wax grade ribbons.

April 11, 2019

(C)2019 Ricoh Company, Ltd. All Rights Reserved

- I will now cover our market position.
- We account for around 50% of the global thermal paper market. Our market share in thermal transfer ribbons is about 30%, key markets being China, India, and ASEAN.
- Japan represents just 20% of our sales, so we are doing our utmost to cultivate overseas markets.

Thermal Paper



Market trends	Core customers	Ricoh's strengths	Initiatives and results
<ul style="list-style-type: none"> ● Global thermal paper market forecast: CAGR7% ● e-commerce market expansion is boosting demand for shipping labels ● Food scale labels increasingly incorporate nutritional and allergy information 	<ul style="list-style-type: none"> ● Logistics players and online sellers with logistics function ● Supermarkets and other retailers 	<ul style="list-style-type: none"> ● Production and supply capability apply to demand growth <ul style="list-style-type: none"> – North America: Doubled adhesive coating capacity in 2017 – China: Doubled thermal paper production capacity in 2018 – Europe: Looking to double thermal paper production capacity by 2020 	<ul style="list-style-type: none"> ● Developed high-resolution products with high heat resistance and built the thermal label market ● Set up full-fledged planning, development, production, and sales units in key Japanese, American, European, and Chinese markets ● Maintained 50% share of global market and boosted sales by around 1.5 times in past five years

Key business strategy	Measures	KPI	Results stance
<ul style="list-style-type: none"> ● Expand operations in key Japanese, American, European, and Chinese food and e-commerce markets 	<ul style="list-style-type: none"> ● Drove business growth by reinforcing production structure in response to demand in food and e-commerce markets <ul style="list-style-type: none"> – North America: Boosted adhesive coating capacity in 2017 – China: Increased thermal paper production capacity in 2018 – Europe: Increase thermal paper production capacity in 2020 	<p>Sales ¥71.3 billion (FY2022)</p>	<ul style="list-style-type: none"> ● Expand earnings from sales gains in target segments <ul style="list-style-type: none"> – Growth rate: 23% (compared with FY2018)

- I will now overview our business strategies by product.
- The CAGR forecast for the global thermal paper market is 7%. Prime drivers are that an expanding e-commerce market should propel logistics growth and that expansion should be stable worldwide in food scale labels.
- Ricoh's strengths are top-quality thermal labels that are the gold standard worldwide for such items and its global production and supply structure. We upgraded capacity in North America in 2017 and in China in 2018. We will construct facilities in France, and aim to boost production capacity thereby 2020 while steadily expanding our business.
- Another strength is that in our key operating regions of Japan, the United States, Europe, and China we maintain production, sales, and research and development units. That setup puts us in a unique position of being able to fully localize by catering to the needs of customers in those markets while procuring local materials.
- Our strategy is to expand our business by capitalizing on anticipated distribution and logistics growth in our four key markets. We look for sales in FY2022 to exceed 70 billion.

Innovation

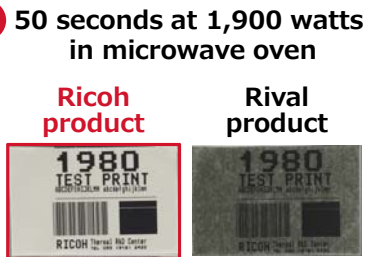
High resolution

Rising ubiquity of two-dimensional codes and character information volume necessitate printing of **high-definition images and text**



High heat resistance

Images impervious to heat, abrasion, and other usage environment stresses

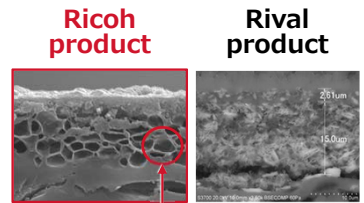


Ricoh's advantages

Balloon structure and cushioned base ensure high thermal head adhesion and **high-resolution printing**

Hollow filler ensures high thermal insulation and retains print energy to maintain **high thermal resistance and sensitivity**

Cross-section of thermal paper



Balloon-structured filler is 90% air

Hollow filler for high print energy efficiency

- I will now present our thermal paper products and technologies.
- Two-dimensional barcodes are increasingly ubiquitous, driving demand for high definition. In general, barcodes blacken when heat is applied, but we were swift to develop high definition products that are very heat resistant.
- Our offerings around the world employ a proprietary hollow filler.

Thermal Transfer Ribbons



Market trends	Core customers	Ricoh's strengths	Initiatives and results
<ul style="list-style-type: none"> Transfer ribbon markets in target areas forecast: CAGR9% Expanding demand from production bases in emerging countries 	<ul style="list-style-type: none"> Manufacturers Logistics firms 	<ul style="list-style-type: none"> Sales and production sites in India, Indonesia, Thailand, and Vietnam to cater to demand growth 	<ul style="list-style-type: none"> Developing products that combine diverse paper types with high resolution and thermal and solvent resistance Have boosted sales in India and Southeast Asia 80% over the past five years



Key business strategy	Measures	KPI	Results stance
<ul style="list-style-type: none"> Expand in emerging nations (India and ASEAN countries) 	<ul style="list-style-type: none"> Expand business by increasing market shares in India, Indonesia, Thailand, and Vietnam, which are experiencing exceptional industrial production growth 	<p>Sales ¥12.2 billion (FY2022)</p>	<ul style="list-style-type: none"> Expand business from sales gains in target country markets <ul style="list-style-type: none"> Growth rate: 18% (compared with FY2018)

- I will now discuss our thermal transfer ribbons.
- The market CAGR in China, India, and ASEAN is around 9%.
- Our core customers are manufacturers and logistics firms.
We will set up production, sales, and marketing sites and provide a full range of services new customers in such high-growth regions as India, Indonesia, Thailand, and Vietnam.
- Progress with thermal transfer ribbons used in industrial products should increase the need for distribution and logistics applications in advanced nations.
We will capture the gains that come from being an early player by setting up new sites and undertaking marketing initiatives.

Products and Technologies : Thermal Transfer Ribbons

Innovation

High resolution

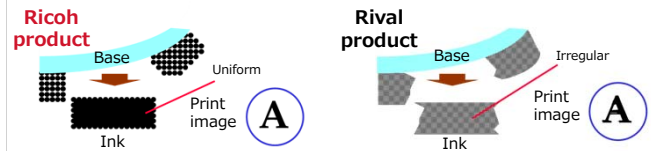
Rising ubiquity of two-dimensional codes and character information volume necessitate printing of **high-definition images and text**

Paper compatibility

Can print on various paper types according to applications

Ricoh's advantages

High resolution



- The ink layers of rival offerings have no gaps, making it hard to work out where breaks should be
- Ricoh offerings offer sharp gaps between particles, for high resolution

Paper compatibility



- Rival offerings have smaller adhesion areas on rough paper, impeding ink fixing
- Ricoh's offerings can print on everything from rough paper to smooth film

- I will now present our thermal transfer ribbon products and technologies.
- Amid a need for printing high-definition images and text, we are in a technological superior position because our offerings enable printing on various types of media, from rough paper to film. Ricoh's offerings are used around the world, and they are highly trusted and are often the products of first choice.

Laser Solutions



Market trends	Core customers	Ricoh's strengths	Initiatives and results
<ul style="list-style-type: none"> ● Increasing personalization demand (one-to-one marketing) ● More food allergen and other mandatory information being listed on labeling owing to amendments in laws ● More real-time sales promotion and mass customization 	<ul style="list-style-type: none"> ● Food and commodity brand owners 	<ul style="list-style-type: none"> ● Fast (5 meters per second) printing solutions with laser printing units and specialized imaging media 	<ul style="list-style-type: none"> ● Developed new solutions by combining high output laser and color development technologies ● Cultivated brand owners by partnering equipment and packaging machinery manufacturers ● Prototype completion



Key business strategy	Measures	KPI	Results stance
<ul style="list-style-type: none"> ● Contribute to business by creating customer value with laser solutions 	<ul style="list-style-type: none"> ● Swiftly create and expand market globally by partnering with existing players (equipment manufacturers and print converters) 	<p>Sales ¥20.0 billion (FY2022)</p>	<ul style="list-style-type: none"> ● Expand operations through new businesses <ul style="list-style-type: none"> – Growth rate: ∞

- The third offering that I wish to discuss today is our laser solutions.
- This business is in the startup phase. We are marketing it to provide brand-new on-demand printing applications for food and commodity production processes.
- Growth in personalization and labeling requirements should present various business opportunities.
- Technological advances have led to the emergence of 200 dpi laser devices for direct marketing.
- We devoted several years to developing applications that could combine our thermal technologies and these laser devices. In March this year we completed a prototype that could print at around 5 meters per second, and have started marketing it.
- As well as with brand owners, we are exploring business opportunities with other companies, including manufacturers supplying line equipment to brand owners.

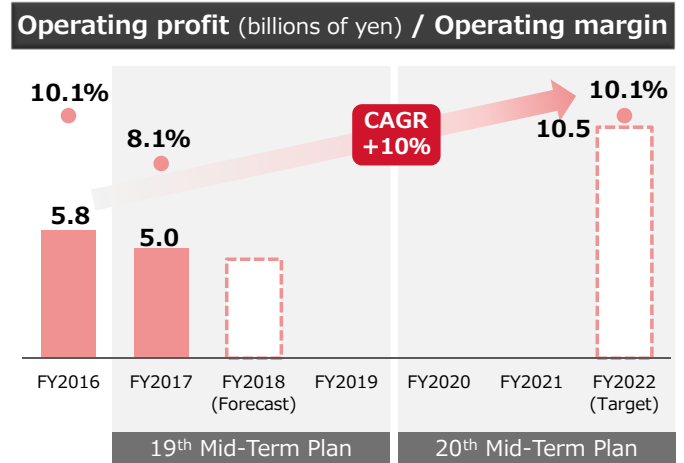
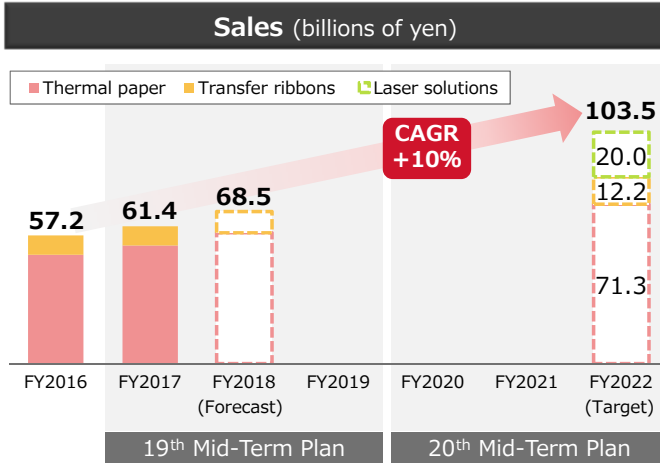
FY2022 Goals

FY2022 Targets

Sales **¥103.5 billion**
Operating profit **¥10.5 billion**

<Key strategy>

- Leverage superior competitive position to optimize earnings while launching new businesses to expand and generate an operating margin exceeding 10%



- Our team aims to boost segment sales by 10% annually to exceed 100 billion yen by fiscal 2022.
- While the going is somewhat tough on the operating profit, once we turn things around we will target an operating margin of 10% to boost operating profit to more than 10 billion yen.
- Thank you very much for your kind attention today.

RICOH
imagine. change.

Forward-Looking Statements

The plans, prospects, strategies and other statements, except for the historical events, mentioned in this material are forward-looking statements with respect to future events and business results. Those statements were made based on the judgment of Ricoh's Directors from the information that is now obtainable. Actual results may differ materially from those projected or implied in such forward-looking statements and from any historical trends. Please refrain from judging only from these forward-looking statements with respect to future events and business results. The following important factors, without limiting the generality of the foregoing, could affect future results and could cause those results to differ materially from those expressed in the forward-looking statements:

- a. General economic conditions and business trend
- b. Exchange rates and their fluctuations
- c. Rapid technological innovation
- d. Uncertainty as to Ricoh's ability to continue to design, develop, produce and market products and services that achieve market acceptance in hot competitive market

No company's name and/or organization's name used, quoted and/or referenced in this material shall be interpreted as a recommendation and/or endorsement by Ricoh.

This material is not an offer or a solicitation to make investments. Please do not rely on this material as your sole source of information for your actual investments, and be aware that decisions regarding investments are the responsibility of themselves.

**Note: In this document, fiscal years are defined as follows:
FY2018 = Fiscal year ended March 31, 2019, etc.**