

**Stock Code : 6568TT**

# **Rafael Microelectronics, Inc.**



# Safe Harbor Statement

Except for historical information contained herein, the matters set forth in this presentation are forward looking statements that are subject to risks and uncertainties that could cause actual results to differ materially, including the impact of competitive products and pricing, timely design acceptance by our customers, timely introduction of new technologies, ability to ramp new products into volume, industry wide shifts in supply and demand for semiconductor products, industry overcapacity, availability of manufacturing capacity, financial stability in end markets, and other risks.

## Key Notes (1/2)

- Broadband tuner demand for TVs and set-top boxes continues to be strong. Supply is tight and insufficient.
- The Internet of Things (IoT) business opportunities continue to be hot. RFIP and RF Design Services have become the main revenue sources of the IoT business.
- Optical communication products win more & more designs and have become new growth drivers.
- Revenue of the new business is expected to be double last year and the goal is to account for 20% of the company's revenue.

## Key Notes (2/2)

- Company transformation is successful. In existing broadband RF core technology, the ability of wireless communication and high-speed optical fiber is well established. It will become a long-term competitive advantage.
- Goals and prospects: 2Q will be higher than previous quarter & previous year. Total annual revenue is expected to grow.
- Risk: Still need to overcome the challenge of supply chain insufficiency.

# Revenue Break Down

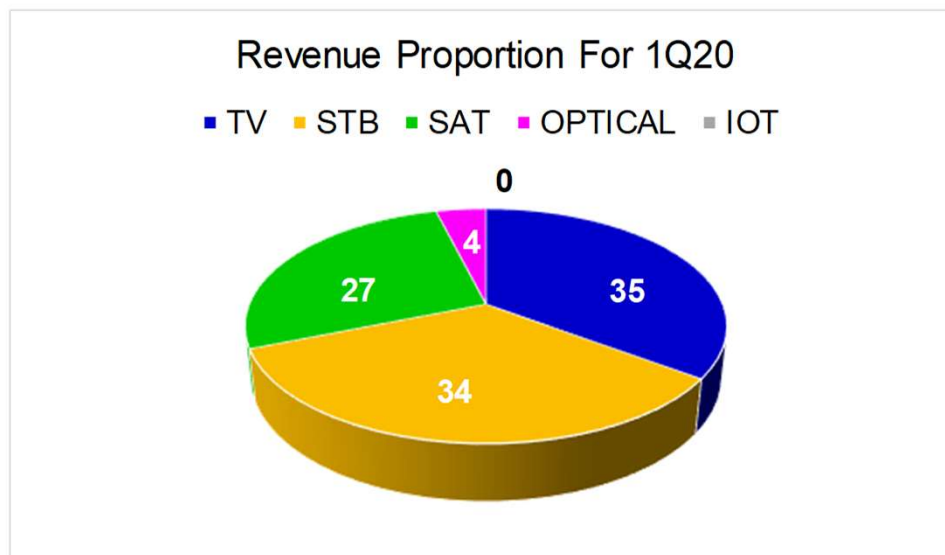
- Except for production & inventory issues leading to weak sales & deliveries of the Satellite product line, during January ~ April 2021 the end market demand for all other products was strong.

Unit:NT\$K ; %

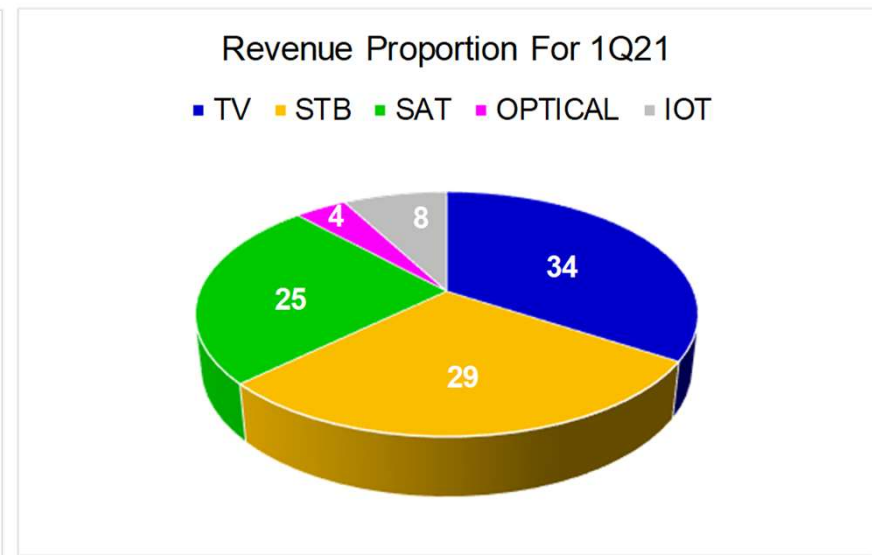
Revenue	Four Months Ended April 30th		YOY(%)
	2020	2021	
TV	82,335	117,360	43
STB	90,718	107,687	19
SAT	93,546	91,920	(2)
OPTICAL	7,848	15,925	103
IOT	0	24,064	NA
Total	274,447	356,956	30

# Revenue by Product Line

- Optical fiber + Internet of Things business accounted for 12% of revenue in the first quarter of 2021. The proportion of annual revenue is expected to continue increasing.

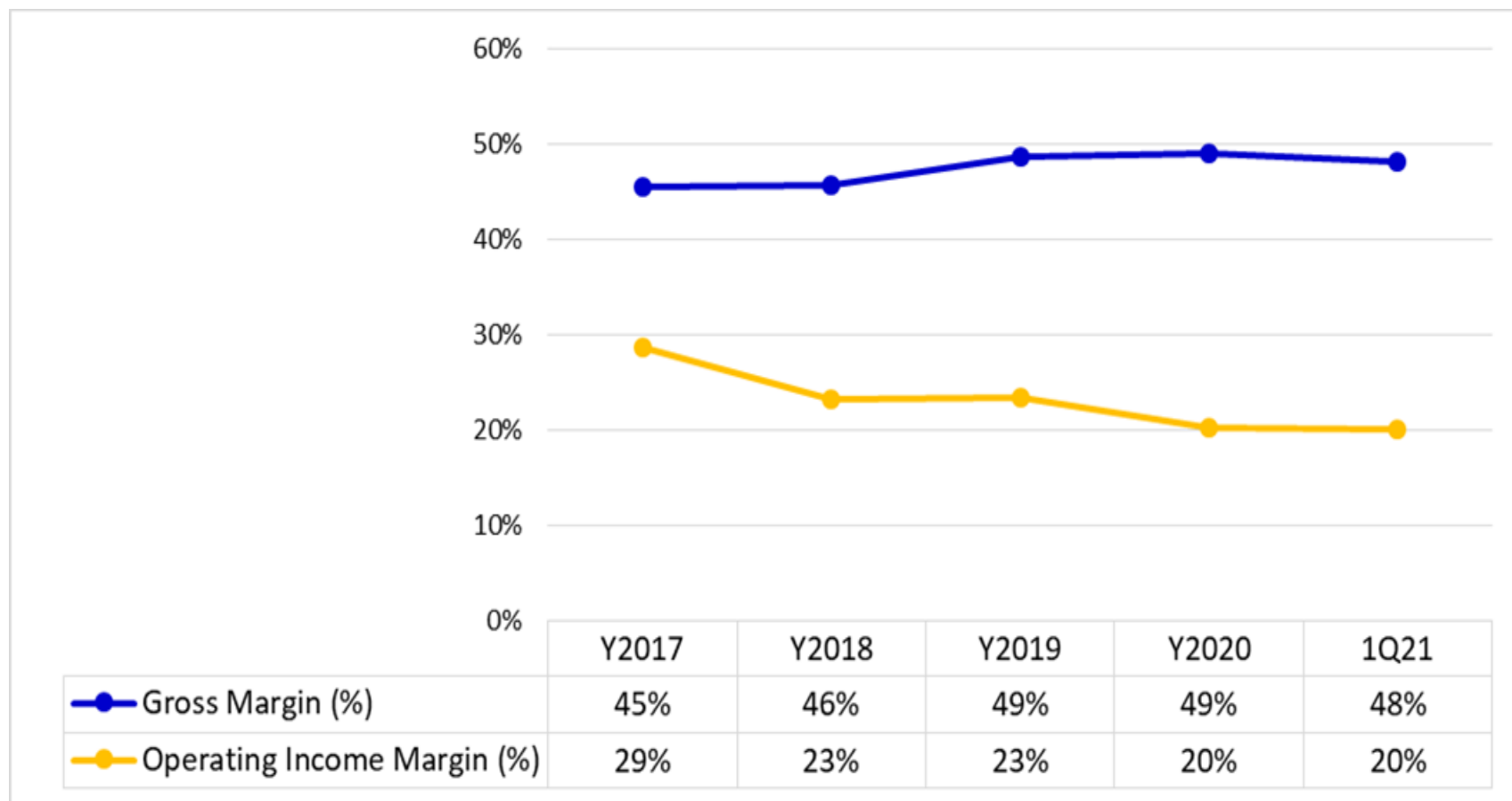


Total Revenue for 1Q20=NT\$230,703K



Total Revenue for 1Q21=NT\$260,674K

# Financial Performance Indices



	Y2017	Y2018	Y2019	Y2020
EPS(NT\$)	9.65	8.85	8.85	7.43
Dividend(NT\$)	5.00	6.00	6.00	7.00

# Rafael Micro Delivers Broadband RF IC's into Five High-volume Mainstream Markets

1

HDTV  
RF Receiver IC



2

Terrestrial &  
Cable STB  
RF Receiver IC



3

Satellite  
Broadcast  
Reception &  
Distribution



4

RF Connectivity, RF IP, ASIC



5

Optical Communication for  
Data Center, FTTH, Consumer



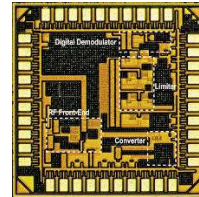
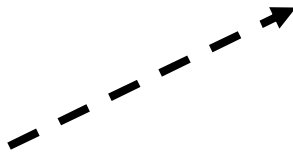
# Broadband RF Tuner Product Line

- TV Tuners continue growing in the global market share. They have entered United States and Japan models one after another.
- Most of the STB Tuner bids in China & emerging markets have been won. The future demand for STB Tuners is optimistic.
- The new 4K/8K Tuner products have been introduced into Japanese & Korean TV/STB platforms. The dual-core DVB-C Tuner has also been successfully adopted in mainstream STB platforms and it is specified in a reference design. Increasing market demand will simultaneously increase future gross profit & revenue.
- Market share of the satellite LNB receiver high-end market has grown steadily. The overall LNB market in 2H will have a wave of business recovery opportunities which will continue into 1Q22 ◦

# Opportunities in Wireless Connectivity

## Rafael Micro offers RF IP as well as IC

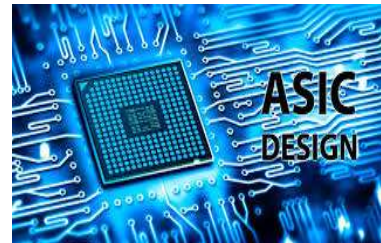
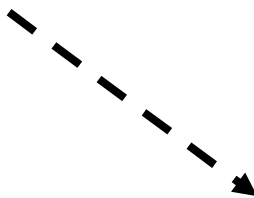
Wireless  
Connectivity



IOT KGD  
IOT SoC



RF IP



Design Services  
Turnkey Business

# Embracing RF IP and RF Design Services Business

- Expecting to sign 10+ RFIP and RF design service contracts in 2021 (three previously in 2020).



**Rafael Micro Specialized in IoT Wireless Subsystem IP**

 Rafael Micro

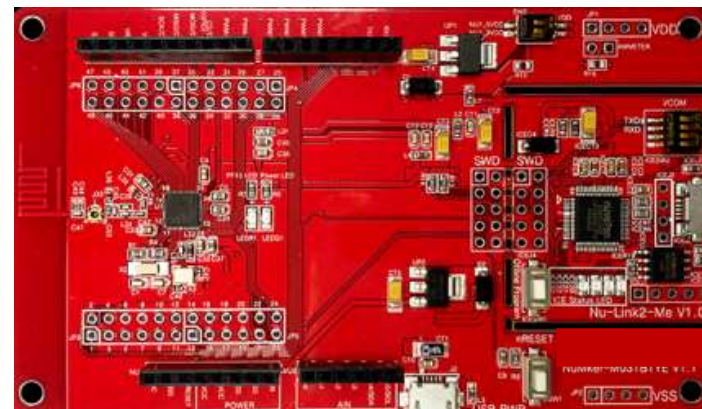
- Bluetooth LE 5 RF/Modem/MAC, SPI-KGD
- Bluetooth/Zigbee combo RF/Modem/MAC, SPI-KGD
- SubG/2.4G combo RF/Modem/MAC
- TSMC 40nm, 22nm and SMIC 55nm with Software Support

[Learn more >>](#)

- Client acceptance of a multi-mode wireless single chip solution has been completed. It is ready for mass production in Q2 and this turn-key revenue will be realized in Q4.
- Signed a contract for design & production of ASIC chips for in-vehicle TV receivers by a Japanese major company.
- For Dual-mode Bluetooth RF IP, already authorized several IC manufacturers and completed contracts.
- Special broadband RF chip design for a US customer is expected to start in Q3

# Wireless Connectivity - IOT

- In 2021 many medium & large MCU companies are expected complete deals to use Rafael Micro Bluetooth chips. They will have adopted the products or entered their design verification stage.
- Applications: wBMS (wireless battery management systems), personal care home appliances, logistics, ESL (electronic shelf label), indoor positioning, e-bikes, smart door locks, street lights, smart homes, BLE modules, etc.
- Samples of a Bluetooth Low Energy / Zigbee 2.4GHz multi-mode chip for wireless remote controls has passed Zigbee Alliance certification. It is scheduled to start mass production in Q4.



# Fiber Optics (1/2)

- The HDMI 2.1 chip passed standard laboratory certification to lead the Asia industry. It is mass-produced and shipping to the top three optoelectronic module customers in the market ◦
- HDMI 2.1 AOC (Active Optical Cable) is available for wide used in home 4K/8K TV, video & audio systems, gaming, e-sports and virtual reality.
- For the 10G PON market, a CMOS laser driver chip meeting the telecom standard has been launched. This product has been successfully verified by major customers and is expected to contribute revenue in Q3.
- Governments, telecom operators and data centers in various countries are stepping up efforts to promote larger bandwidth PON networks with the rise of 5G mobile communications, cloud data centers and home office trends. This is driving huge demand for network bandwidth which will further stimulate development of 10G PON.

## Fiber Optics (2/2)

- 25G/40G/100G data center transmission chips simultaneously entered mass production. Samples have been certified by major optical module vendors and are expected to contribute revenue in Q4.
- With the increasing demand by people working from home and distance learning under the COVID-19 epidemic, newly-built super-large-scale data centers have successively started operations in 15 different countries in the past year.
- IDC market research agency indicates there were only 500,000 data centers handling global data traffic in 2012 but today there are more than 8 million. Among them, 504 ultra-large-scale data centers are in operation which directly drives the demand for high-speed data transmission chips.
- 200G/400G PAM4 high-speed data communication continues being developed.

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