

# **RichWave Technology Corp.**

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2018 Q1 Industry Investment Forum

March 21, 2018

**Vision**



**World RFIC Leader  
by Technology and Innovation**



# 2017 P&L

Unit: NT\$ million	2017		2016		YoY	Remark
	Amount	%	Amount	%	%	
Net Sales	2,666	100	2,162	100	23.4	
COGS	1,757	65.9	1,430	66.1	23	
Gross Margin	909	34.1	732	33.9	24	Product mix
R&D	340	12.7	274	12.7	24	
SG&A	298	11.2	275	12.7	9	
Operating Expenses	638	23.9	549	25.4	16	
Operating Profits	271	10.2	184	8.5	48	
Non-Op. Profits(Loss)	(109)	(4.1)	(12)	(0.5)	821	Exchange-rate & settlement
Net Income before Tax	162	6.1	172	7.9	(6)	
Tax Expense	20	0.7	21	1.0	(7)	
Net Income after Tax	142	5.3	150	6.9	(5)	

EPS in NT\$

2.59

2.74

# Q4'17 P&L

Unit: NT\$ million	4Q 2017		4Q 2016		YoY	3Q 2017		QoQ
	Amount	%	Amount	%	%	Amount	%	%
Net Sales	713	100	605	100	18	707	100	1
COGS	484	67.8	404	66.8	20	484	68.5	(0)
Gross Margin	229	32.2	201	33.2	14	223	31.5	3
R&D	87	12.3	70	11.6	24	88	12.4	(0)
SG&A	70	9.9	89	14.7	(21)	70	9.8	1
Operating Expenses	158	22.1	159	26.4	(1)	157	22.3	0
Operating Profits	72	10.0	41	6.8	73	66	9.3	9
Non-Op. Profits(Loss)	(5)	(0.7)	17	2.8	(130)	(0)		
Net Income before Tax	66	9.3	58	9.7	14	65	9.2	2
Tax Expense	8	1.1	8	1.4	(7)	7	0.9	20
Net Income after Tax	59	8.2	50	8.3	17	59	8.3	

EPS in NT\$

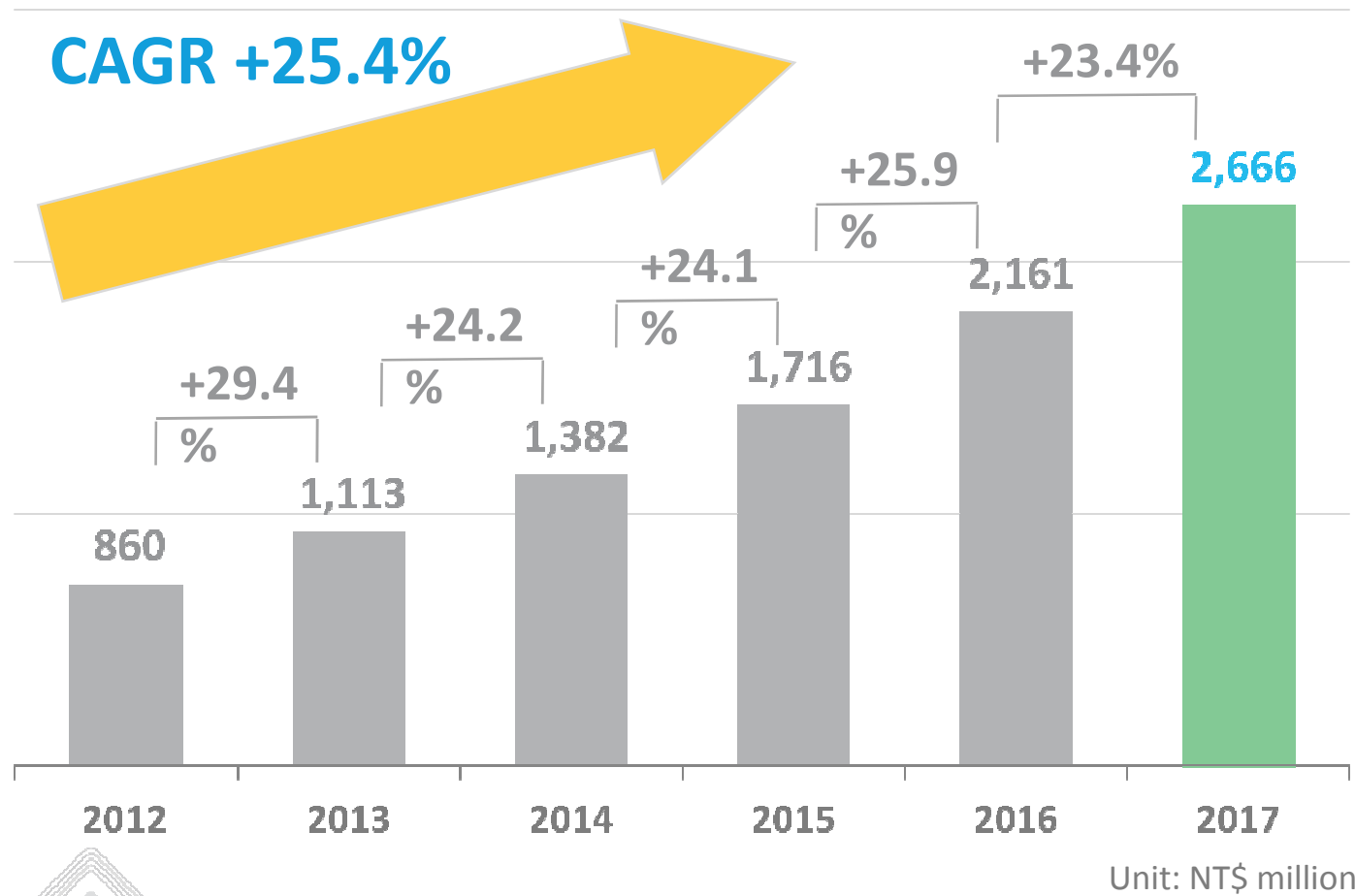
1.07

0.91

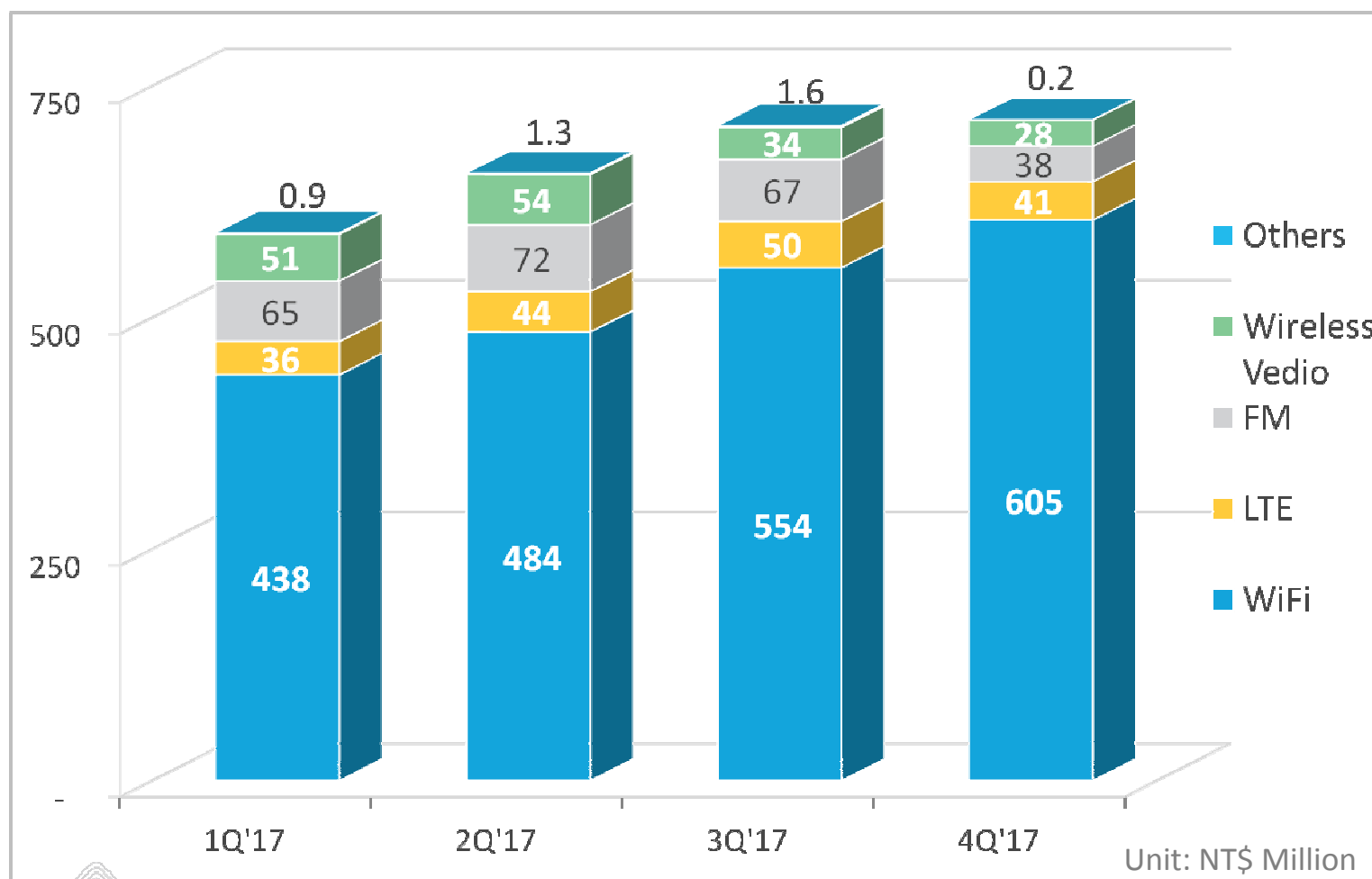
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# Net Sales 2012~2017

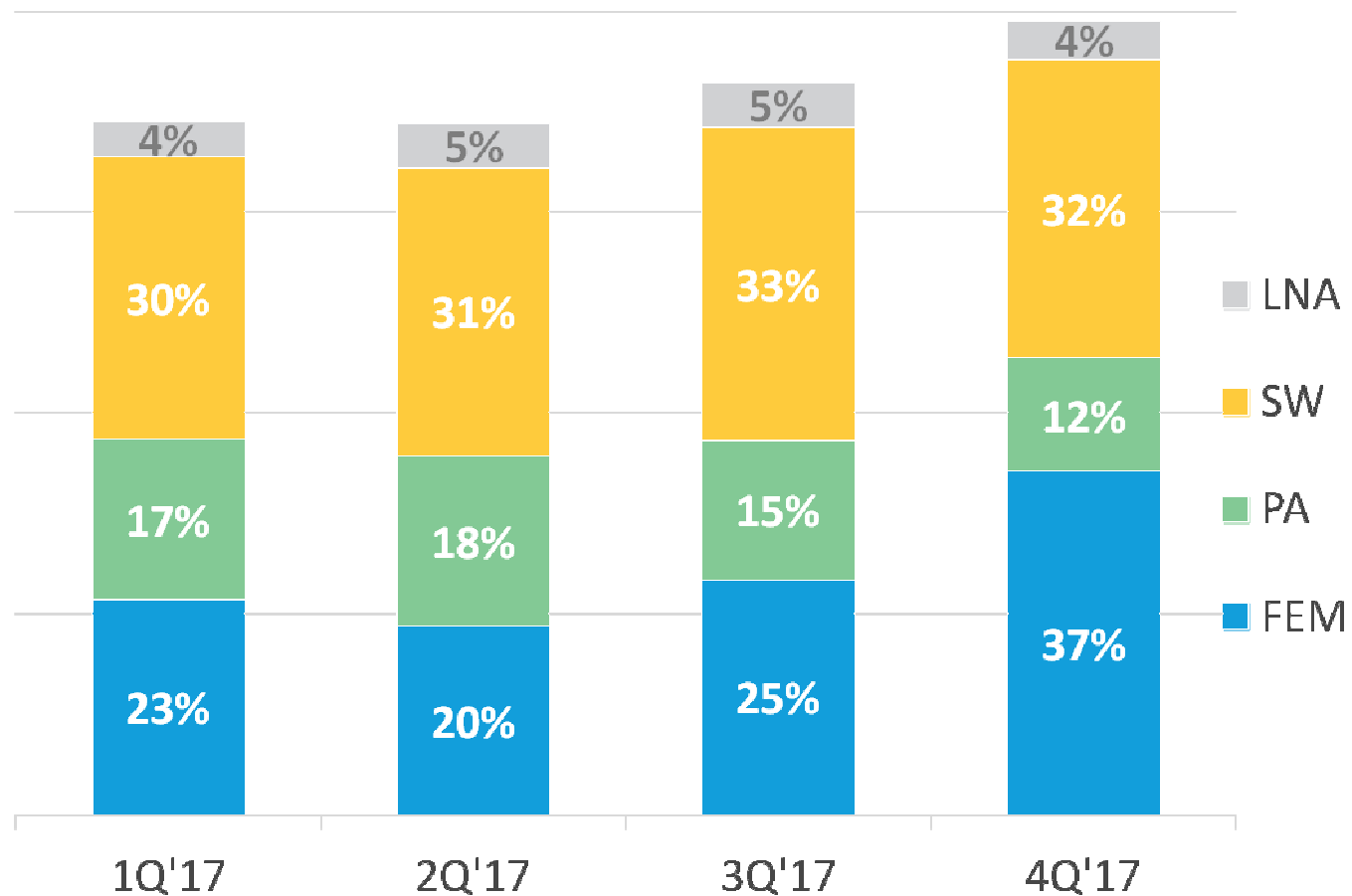
Steady and Continuous Growth



# Revenue by Products 2017



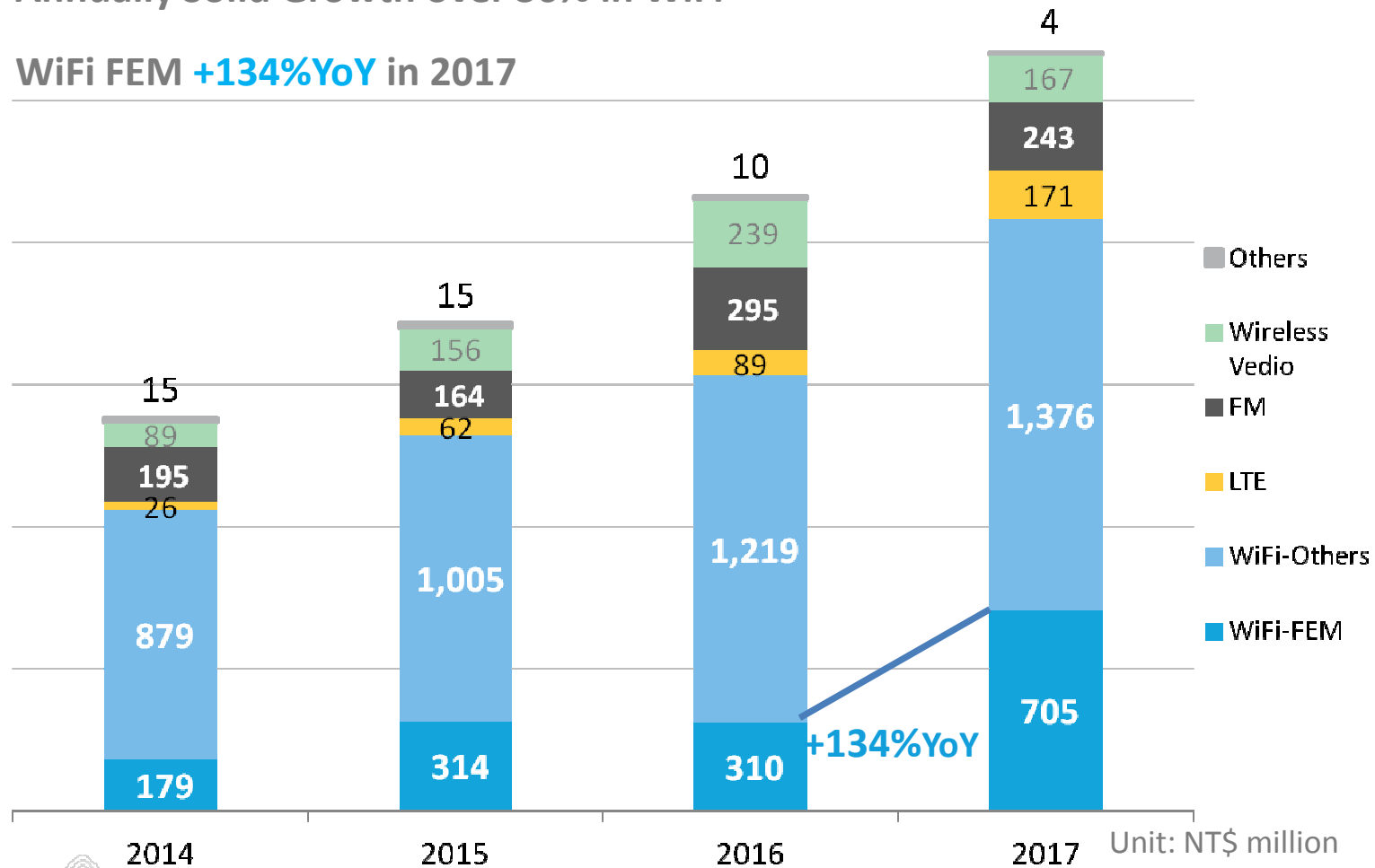
# Sales Contribution by WiFi



# High Growth from WiFi

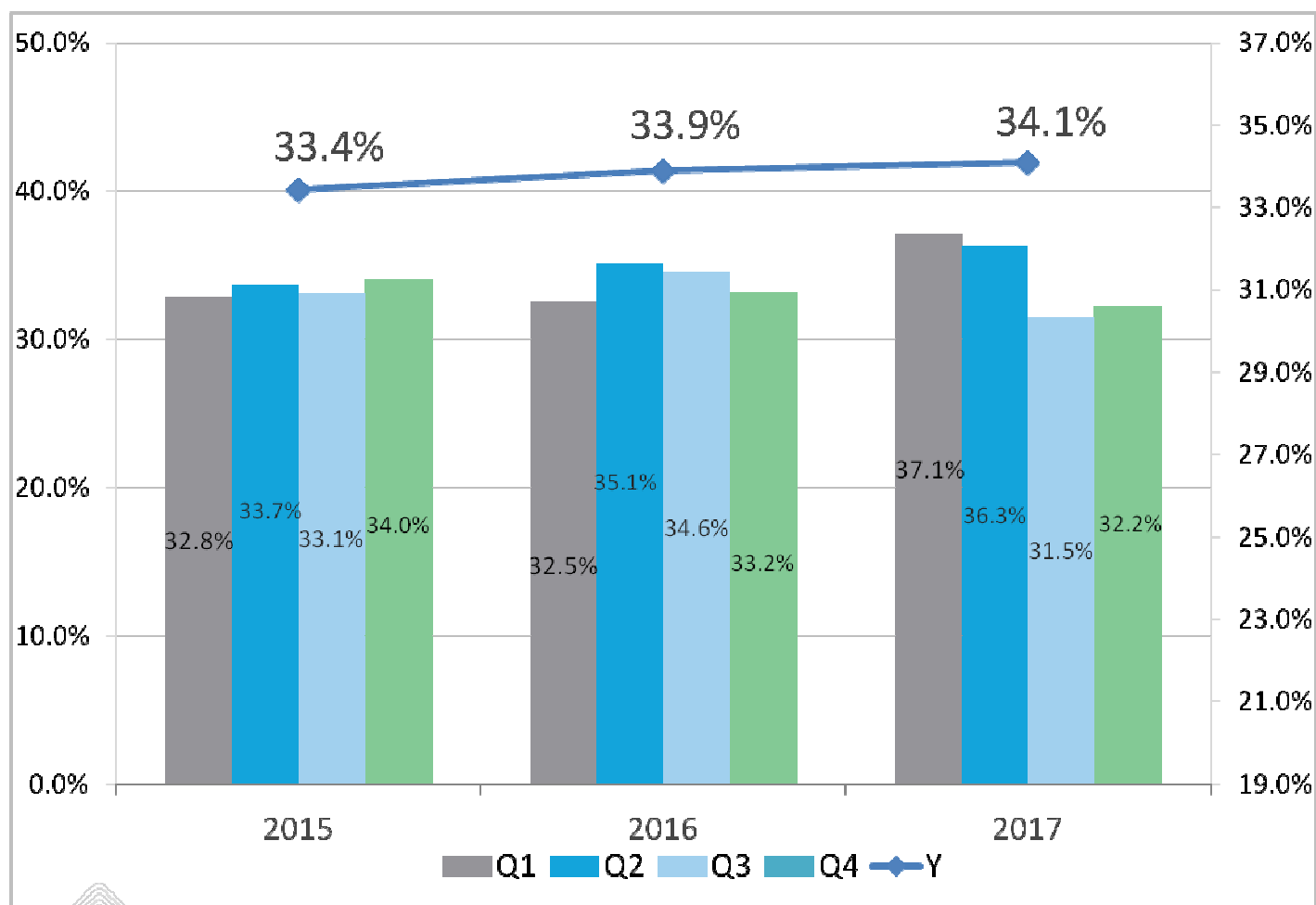
Annually Solid Growth over 36% in WiFi

WiFi FEM **+134%YoY** in 2017

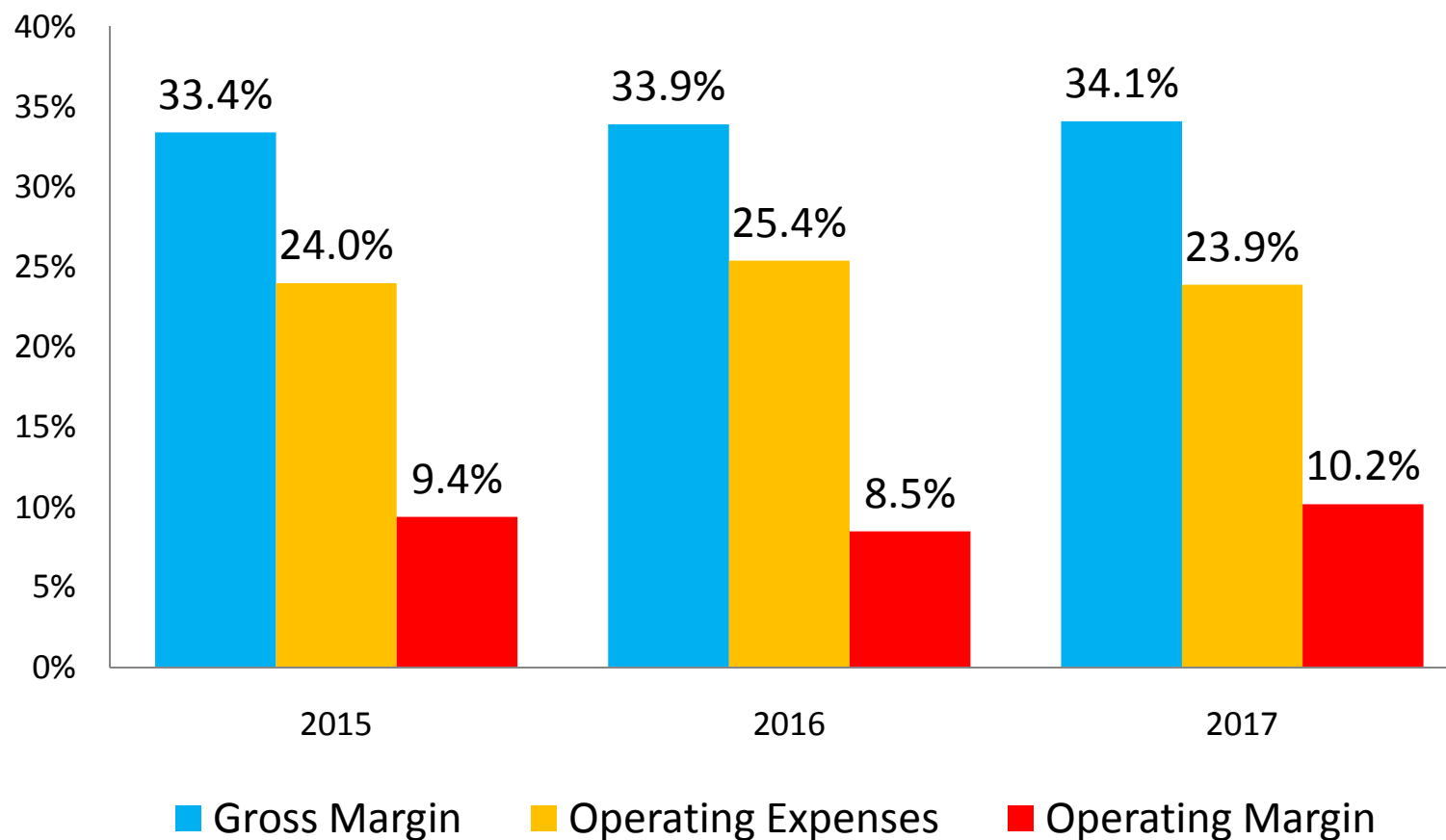




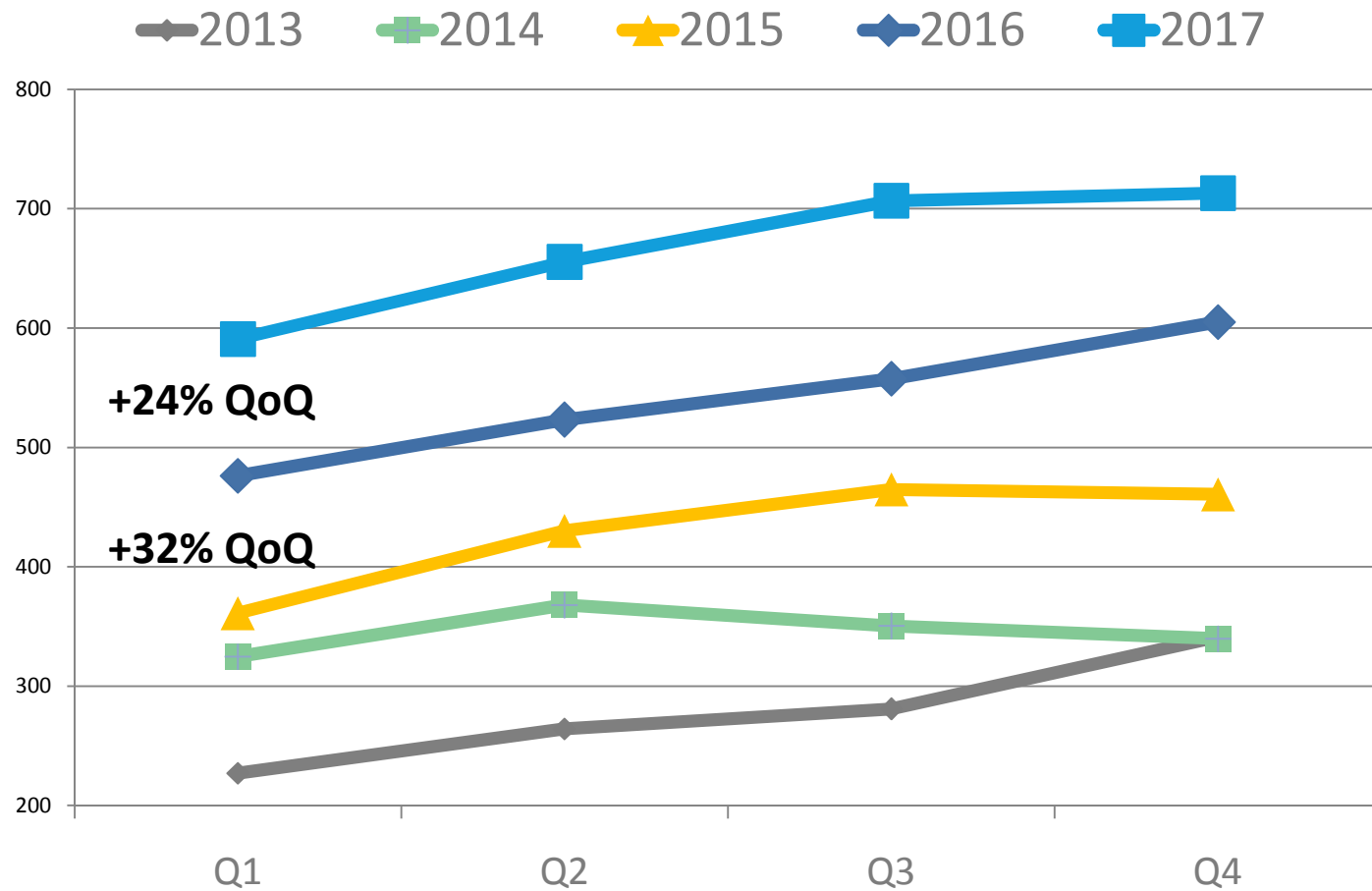
# Gross Margin Trend 2015~2017



# Performance 2015~2017

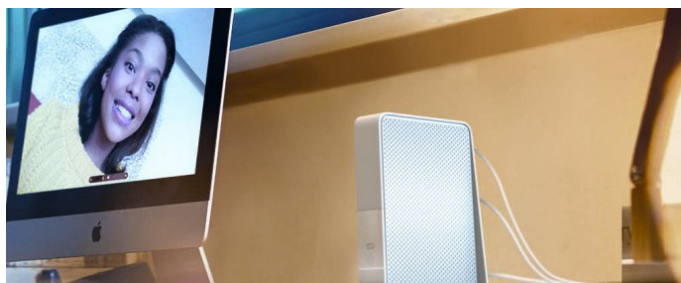


# Seasonality



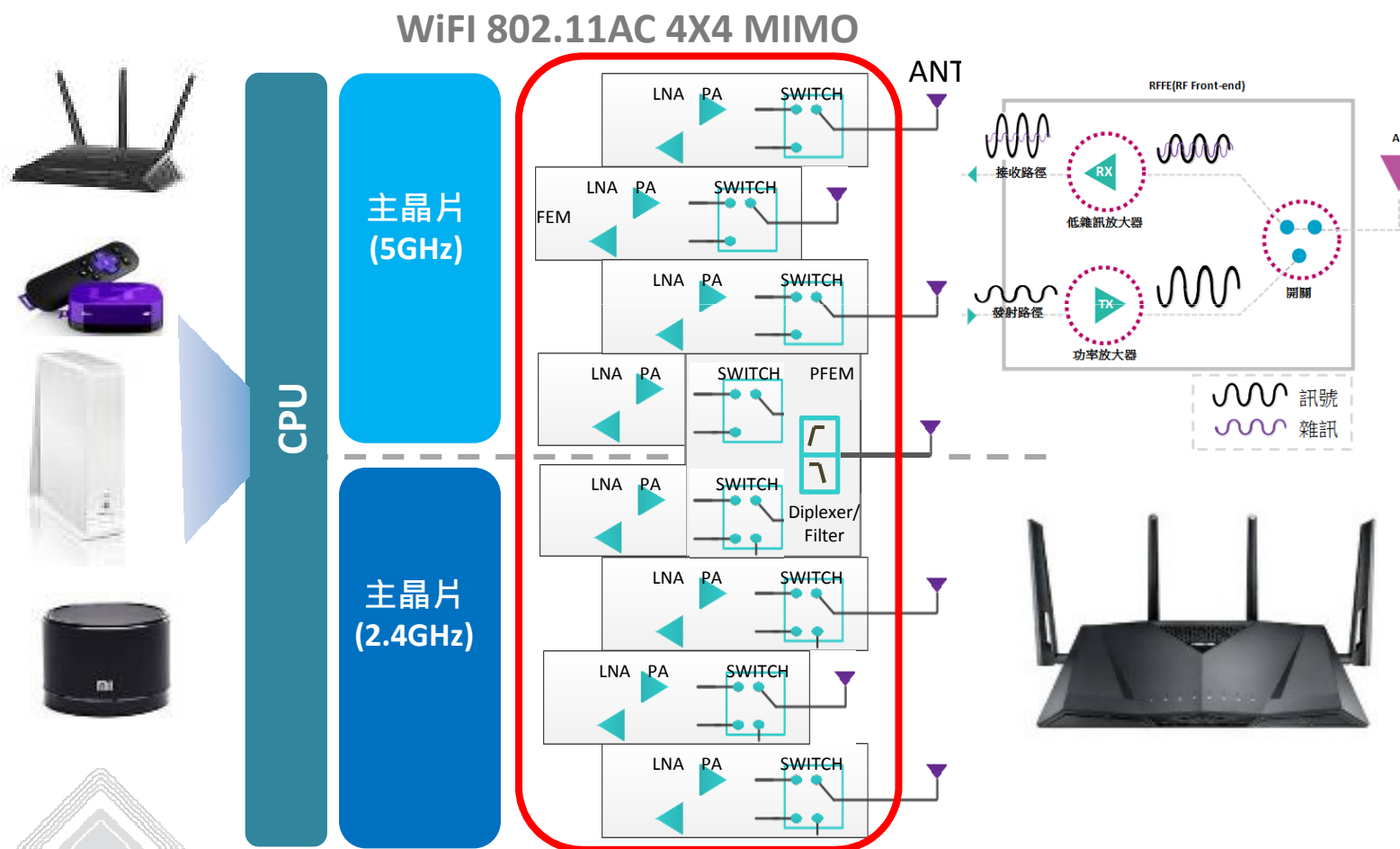
# Business Driven by

- Diversified WiFi Connected Applications
- Technology Migration(11n to 11.ac in volume, and increasing MIMO)
- Demanding RF FEM in Mobile Market
- IOT/Consumer Market adopt RF FE
- Broadcasting tuner and Smart home



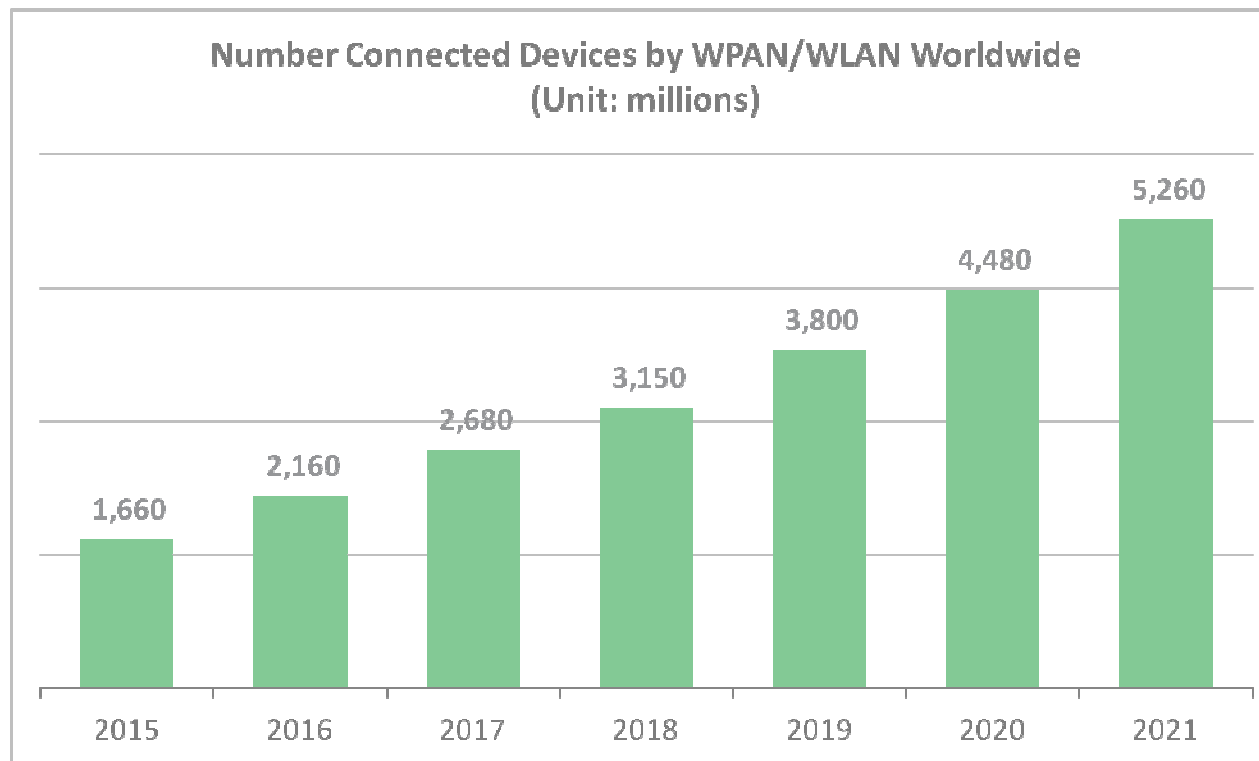
# Blooming RF Demand w/MU-MIMO

- The Front-End enhances coverage-range (PA/LNA) and receiving sensitivity (LNA) – FE performance is Key.



# Growing Demand for WiFi Connected

Connected Devices increases 600~800mn devices/year from 2018 to 2021  
WiFi RF-Front-End demand increase multiply by MIMO-number



Source: Berg Insight Statista

# Applications for WiFi Connected

Segments	2017 (f)	2020 (f)	Growth	Remarks
Smart Speaker	8.3	94	1075%	M units, US,2016
Automotive	1,062	7,914	645%	US\$M, 2016
Smart Home	65	320	392%	M units
IoT	20,000	30,000	50%	M units
Game Consoles	33,800	46,000	36%	US\$M
STB/OTT	380	460	21%	M units, 2020
AP Router (DSL, Cable, PON)	350	400	14%	M units
Smart Phone	1,517	1,697	12%	M units
Smart TV	104	114	10%	M units, 2018
PC/Laptop/ Tablet	435	433	-0.5%	M units, 2016

Source: IDC, IHS, Accelerating Biz analysis, frost & Sullivan, Ovum, Statista, IDATE, Gartner, Voicebot.ai, Edison Research, Digital Market Outlook, ABI Research

# 11ac/ax Speed & Capacity Growth Multiply

	802.11g	802.11n	802.11ac	802.11ax
使用頻段	2.4 GHz	2.4/5 GHz	5 GHz	2.4/5 GHz
使用頻寬	20MHz	20MHz 40MHz	20MHz 80MHz 40MHz 160MHz	20MHz 80MHz 40MHz 160MHz
最高天線數	1X1 SISO	4X4 MIMO	8 MIMO(MU-MIMU)	12x12 MIMO
現有標準速度 (理論值)	54 Mbps	150 Mbps 300 Mbps 450 Mbps (頻寬40MHz)	433 Mbps 867 Mbps 1300 Mbps (頻寬80MHz)	600.4 Mbps 9607.8 Mbps
最高速率(理論值)	54 Mbps	600 M bps	6.93 Gbps	9.6 Gbps

Source: [adrenaline.uol.com.br](http://adrenaline.uol.com.br)

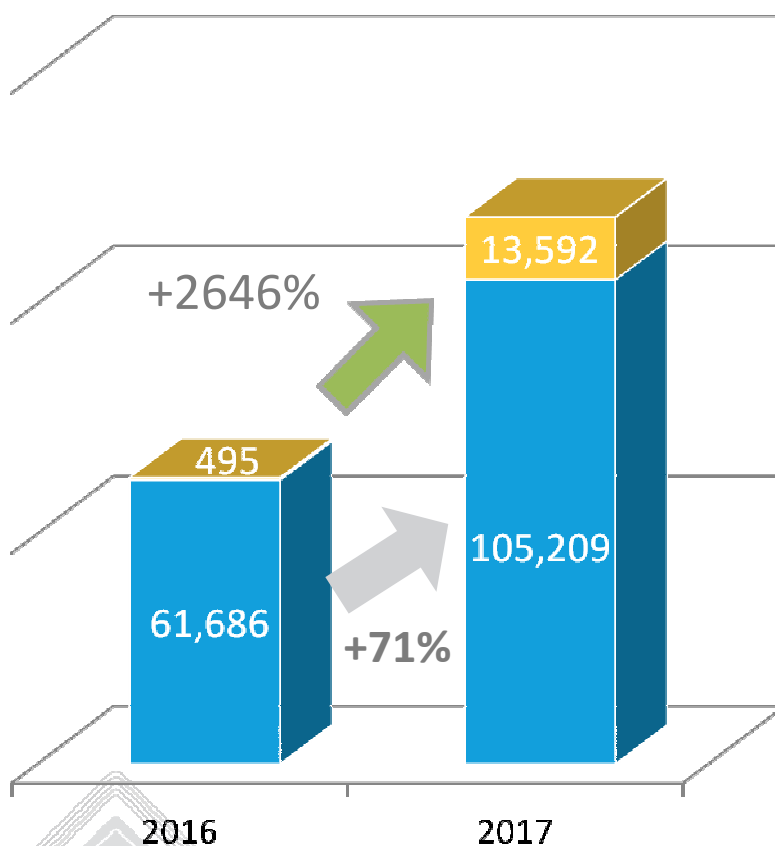


# Richwave LTE LNA/SW for Mobile

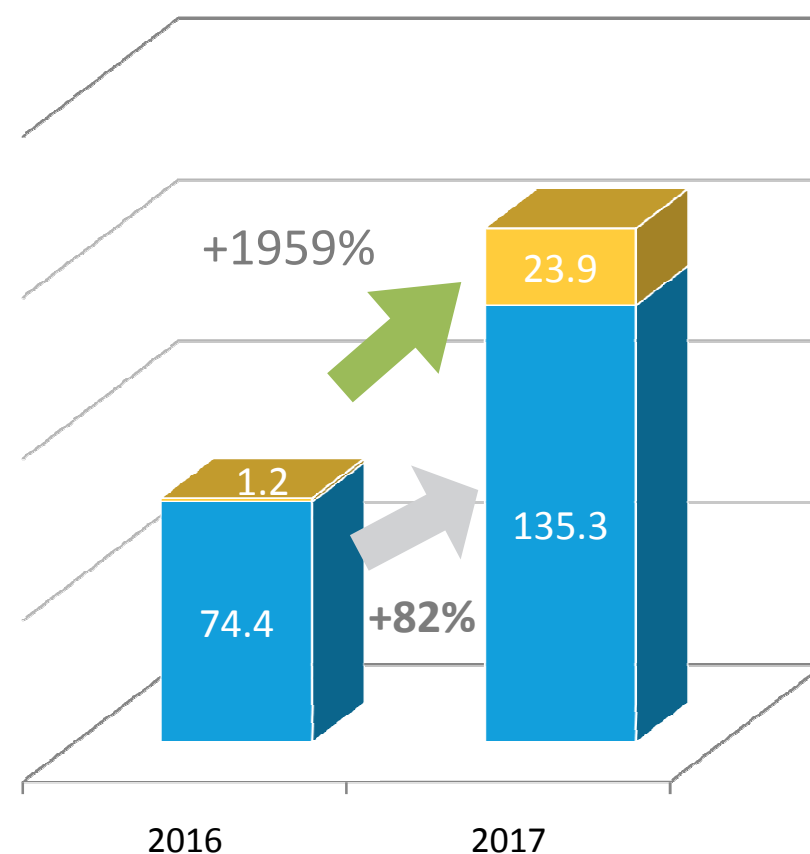
LTE SW/LNA growth from China top brand, with 110% growth  
Continue penetrating into global brands.

■ LTE SW ■ LTE LNA

(A) Shipment Unit: K



(B) Revenue Unit: NT\$ million

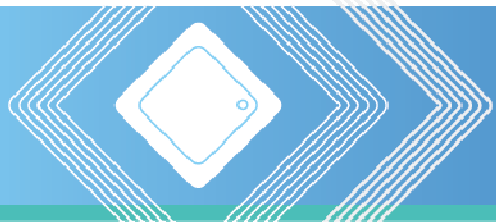


# FM Broadcasting & Wireless Video

- Keep expanding in broadcast and wireless video.
- FM continue win in Korea flagship phone.
- Wireless long-distance HD video ship to smart home, car backup, drone... with our proprietary transceiver.



Source; Web. News Feb. 25, 2018



**RichWave**