

RichWave Technology Corp.

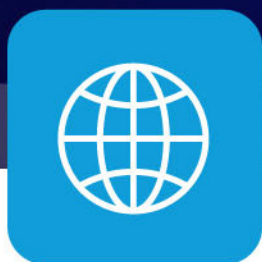
2018 Q3 Investor Conference

Nov. 2018

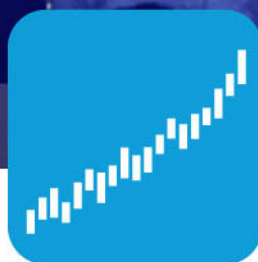
COMPANY OVERVIEW

SHANGHAI
SHENZHEN
• SEONGNAM
• TAIPEI
CHUPEI

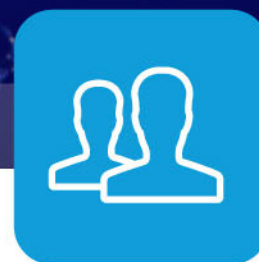
SAN JOSE



Founded
Jan. 2004



Listed in TSE
Nov. 2015



Customers
350



Products
270

Vision



**World RF IC Leader
by Technology and Innovation**

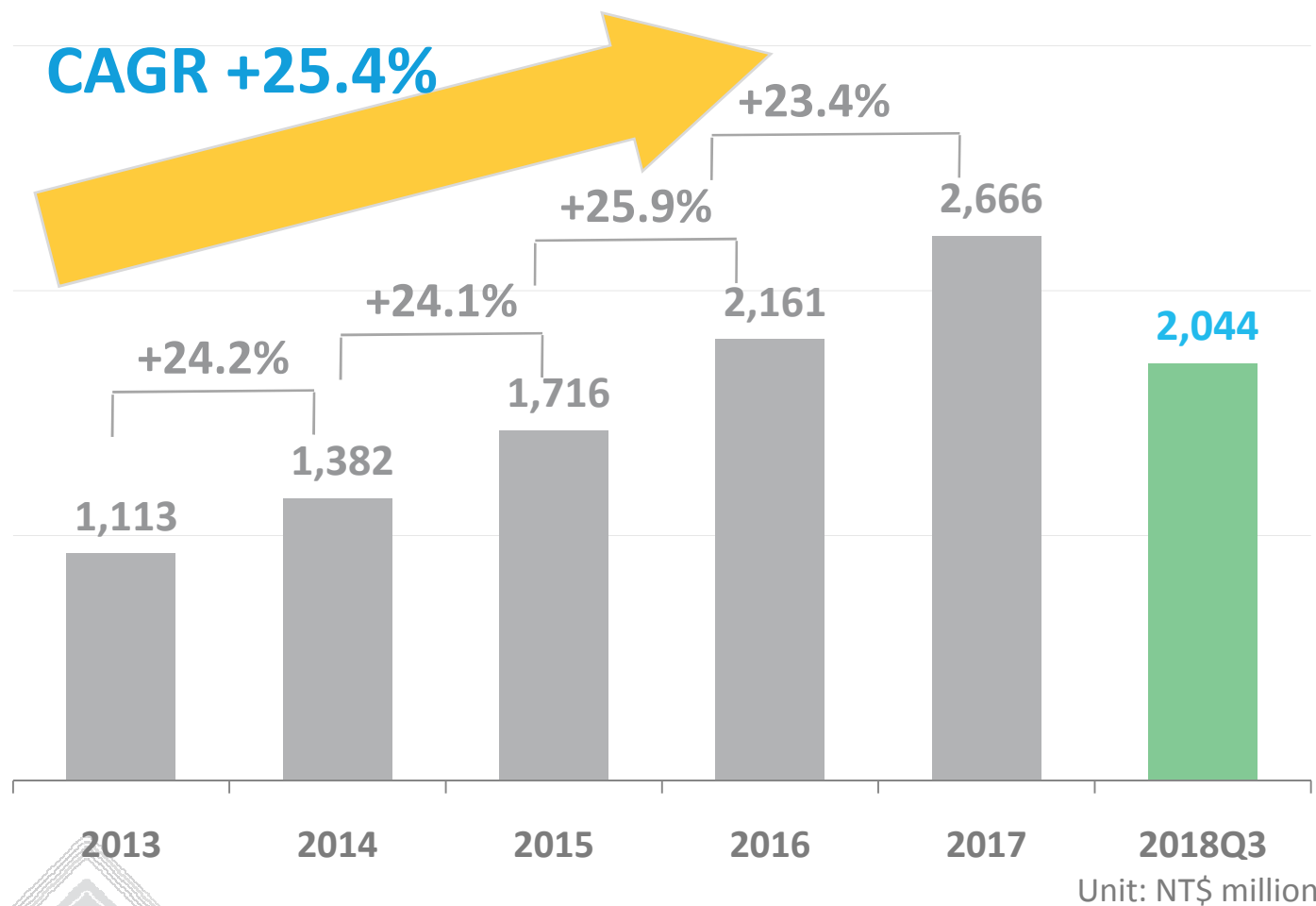


Q3'18 P&L

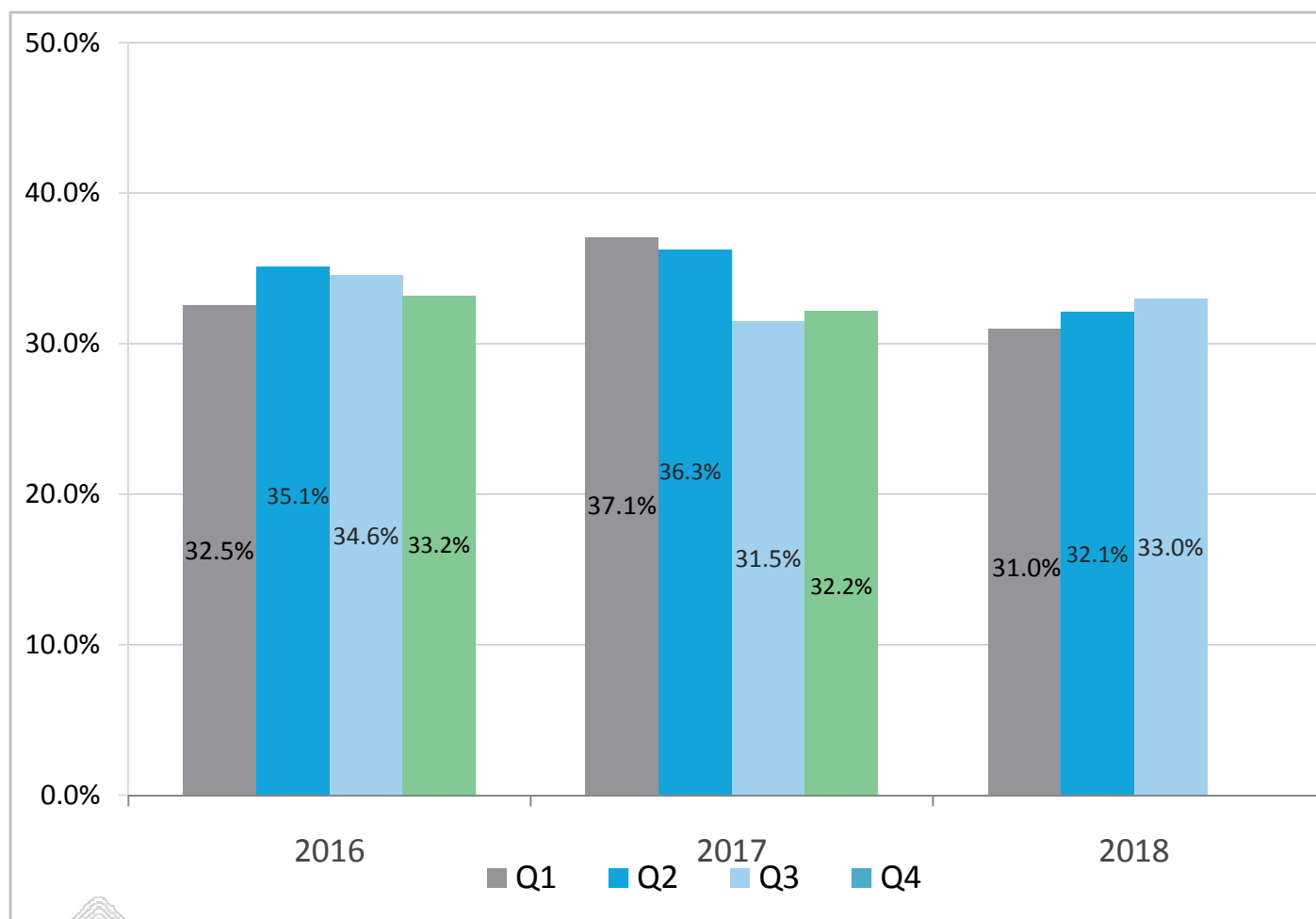
Amount:NT\$ MN	2018 Q3		2018 Q2		QoQ	2017 Q3		YoY
	Amount	%	Amount	%	%	Amount	%	%
Net Sales	669	100.0%	712	100.0%	-6.0%	707	100.0%	-5.4%
Gross Margin	221	33.0%	229	32.2%	-3.5%	223	31.5%	-0.9%
Operating Expense	164	24.5%	180	25.3%	-8.9%	157	22.2%	4.5%
Operating Profit	57	8.5%	49	6.9%	16.3%	66	9.3%	-13.6%
Non-Op. Profits(Loss)	5	0.7%	12	1.7%	-58.3%	-1	-0.1%	-600.0%
Net Income before Tax	62	9.2%	61	8.6%	1.6%	65	9.2%	-4.6%
Net Income after Tax	54	8.1%	47	6.6%	14.9%	59	8.3%	-8.5%
EPS	0.89		0.79			0.97		

Net Sales 2013-2018Q3

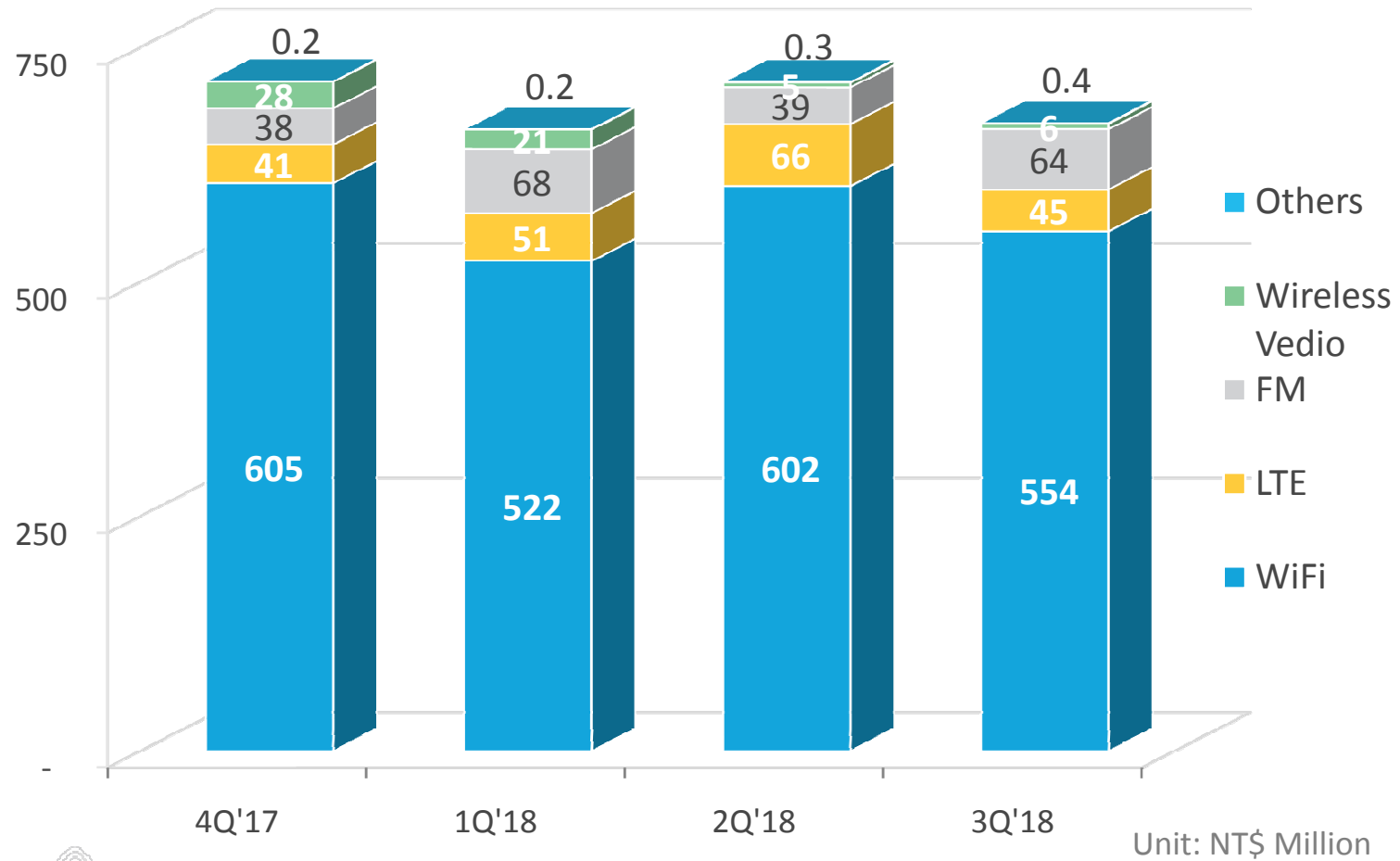
Steady and Continuous Growth



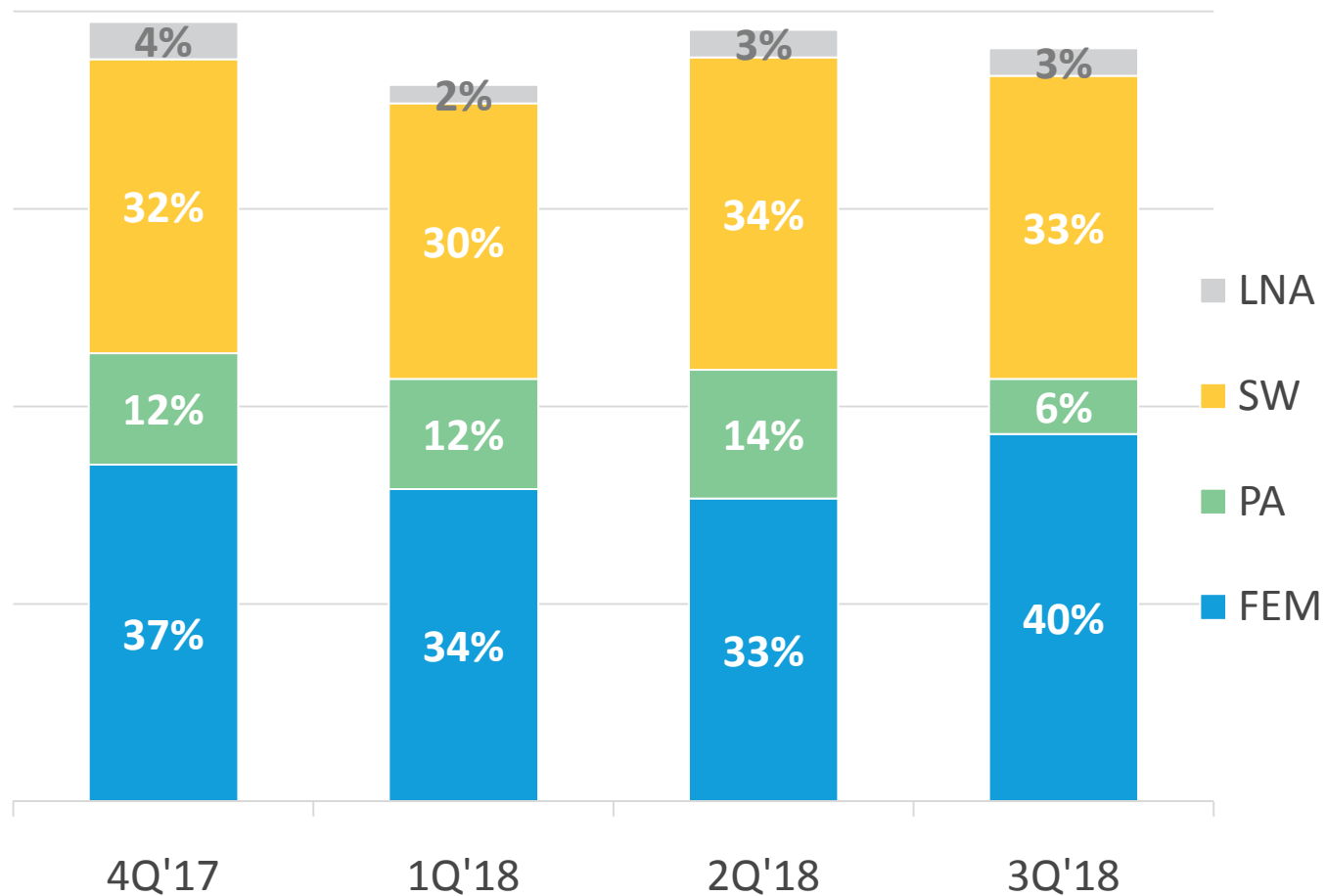
Gross Margin Trend 2016-2018Q3



Revenue by Products

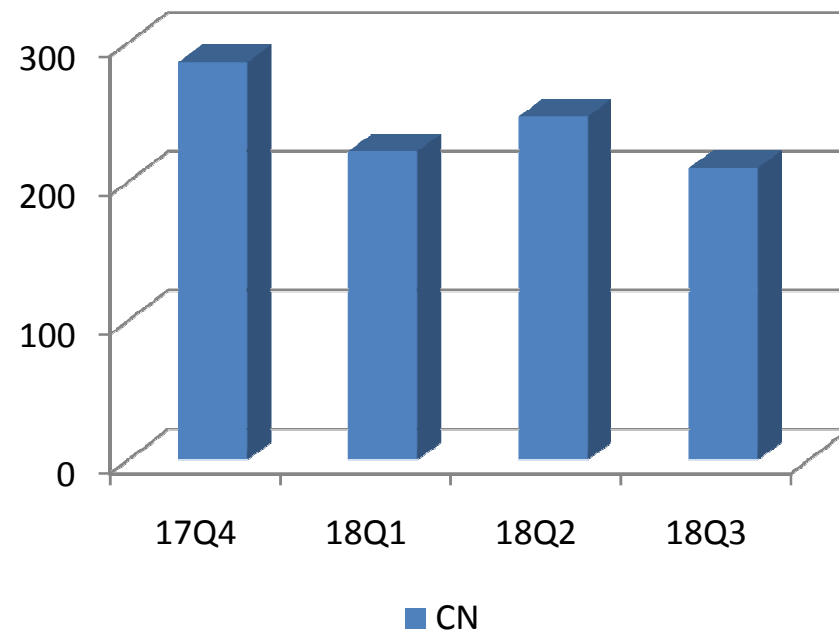


WiFi FEM Continues to Grow

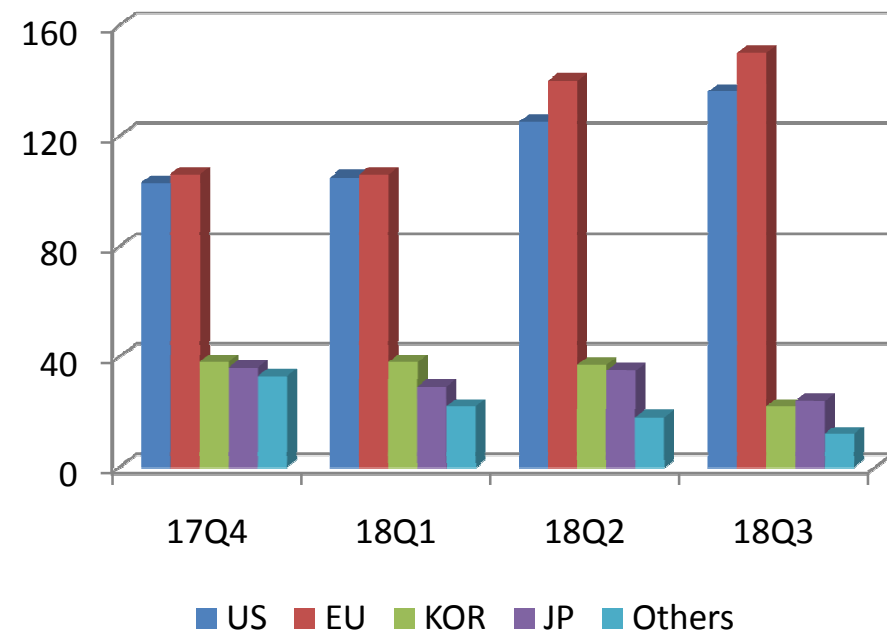


WiFi Revenue by Areas

Unit: NT\$ million



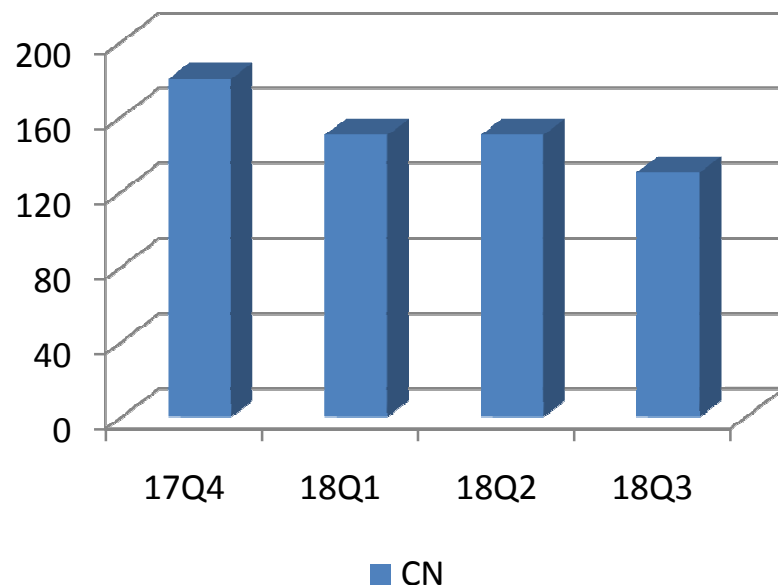
Unit: NT\$ million



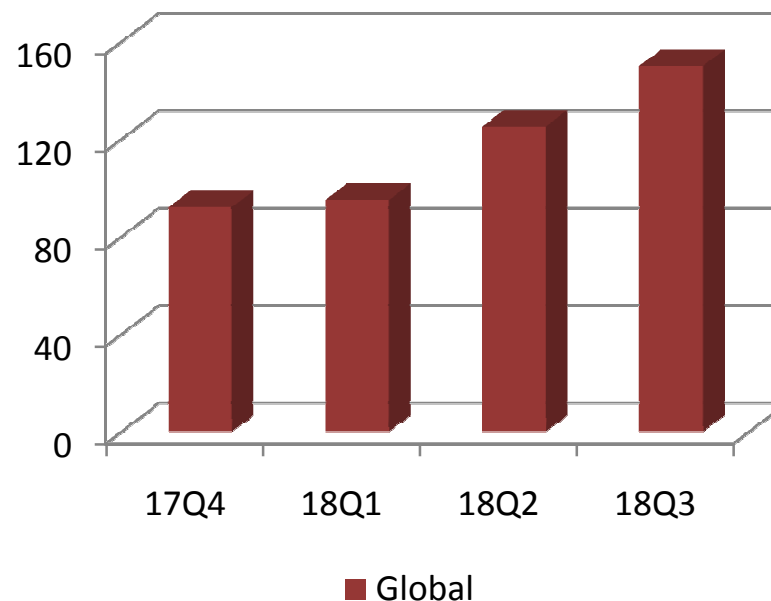
Key Growth in Global Brand WiFi AP Market

- 11ac FEMs continue expanding to global brands AP market including retailers and telecom operators.

Unit: NT\$ million



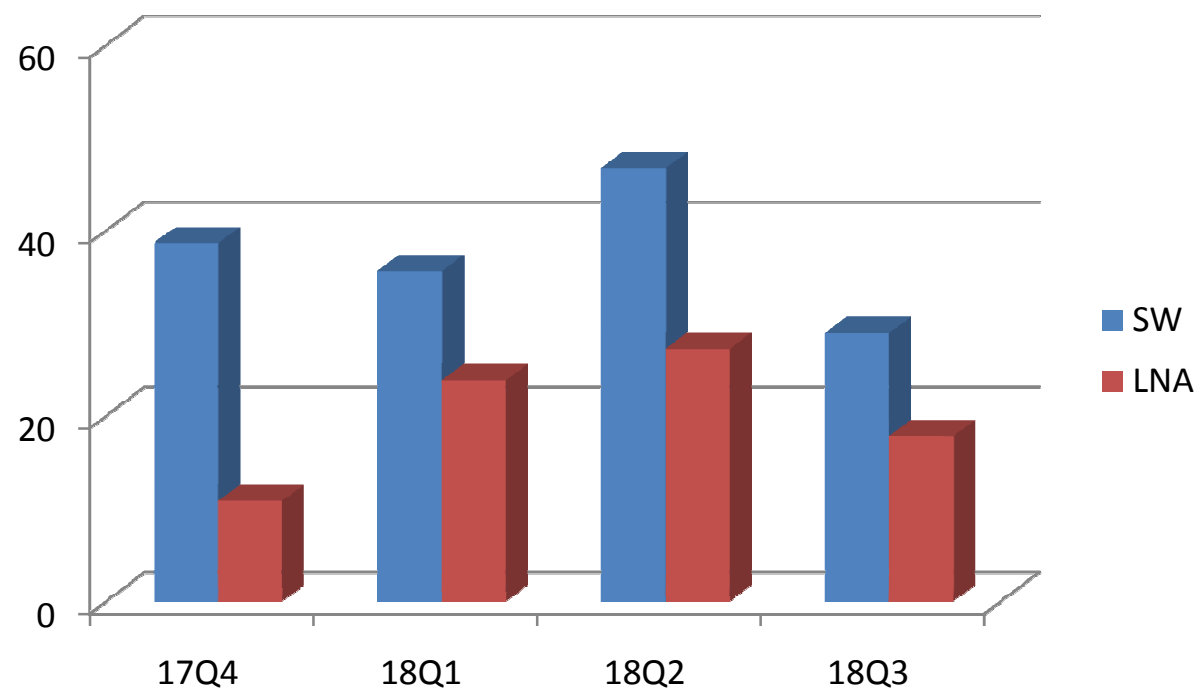
Unit: NT\$ million



LTE LNA Continue Wins in Mobile Brands

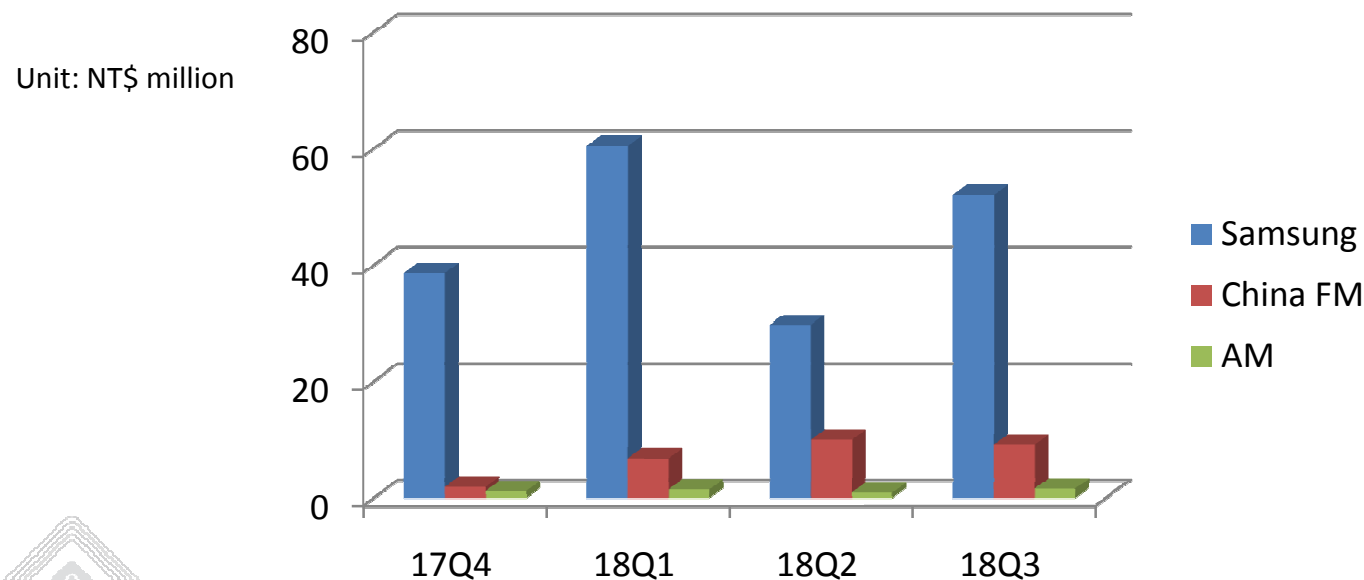
- LTE LNA continue to win in main CN mobile brands

Unit: NT\$ million



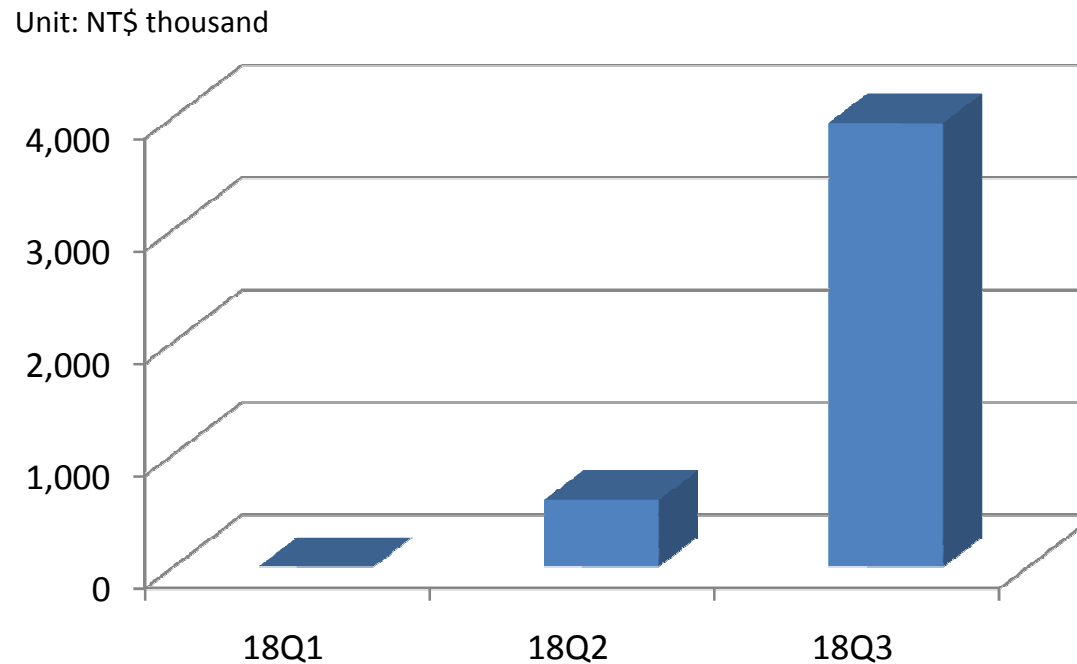
FM Penetrates Further Main Mobile Brand

- FM continues on flagship phones, and expands to further Korea main brand.
- Next generation FM launched, with enhanced performance spec, and is being designed on reference design for main flagship phone models.
- AM: winning in Clock/Seeking Radio.



WiFi FEMs Launched & Start to Ship to Mobile

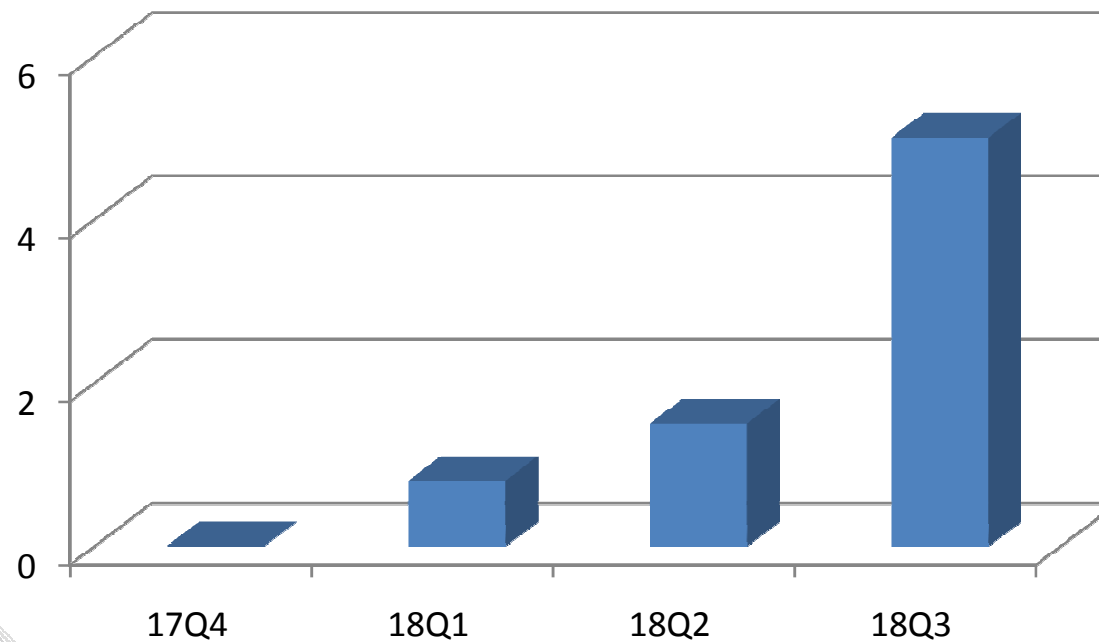
- 2GHz full FEM and 5GHz full FEMs start shipping to main CN mobile brands



Penetrate into China NB-IoT Market

- Have a complete solution for IoT, including SW/LNA for sub 1G band for LoRa, and full band for NB-IoT.
- Penetrates and wins NB-IoT models for CN telco operators, and starts volume shipment.

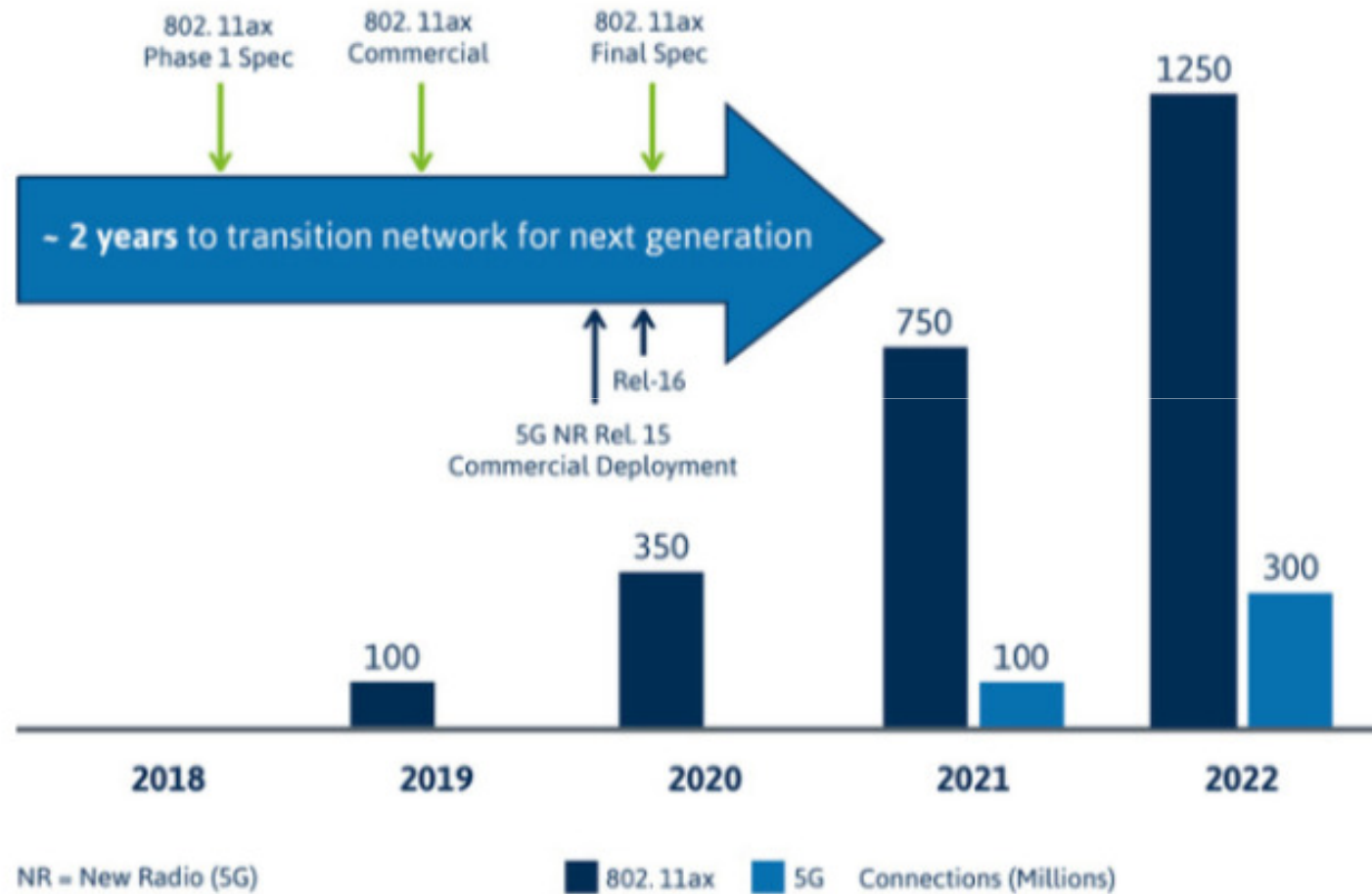
Unit: NT\$ million



New Products Launch to Market



WiFi Moving into 11ax



Source: Wireless Broadband Alliance, 2018/9

WiFi 11ax FEMs for AP Router

Power Level	Frequency Band	VCC (V)	Power (dBm) MCS11 VHT80
P1: Middle Power	2.4GHz	5	20
P1: Middle Power	5GHz	5	18
P1: High Power	2.4GHz	5	22
P1: High Power	5GHz	5	21
P2: Middle Power	2.4GHz	5	20
P2: Middle Power	5GHz	5	18
P1: HE	2.4GHz	3.3	14
P1: HE	5GHz	3.3	14
P2: HE	2.4GHz	5	20
P2: HE	5GHz	5	18

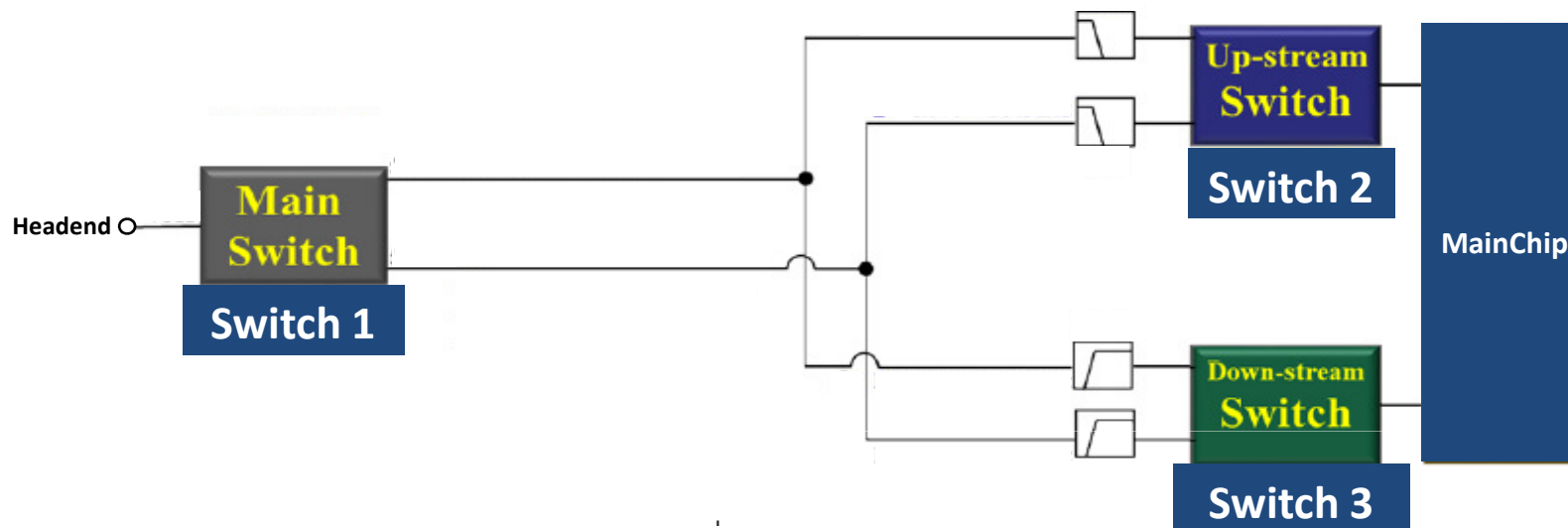
WiFi 11ac FEMs for Mobile

Power Level	Frequency Band	VCC (V)	Power (dBm)
			MCS9/MCS7
P2: Middle Power	2.4GHz FEM	3.7	19.5
P2: Middle Power	5GHz FEM	3.7	20
P1: Middle Power	2.4GHz FEM	3.7	19
P1: Middle Power	5GHz FEM	3.7	18
P2: Middle Power	Dual band FEM	3.7	20
P2: Middle Power	Dual band FEM	3.7	20

WiFi 11ax FEMs for Mobile

Power Level	Frequency Band	VCC (V)	Power (dBm)
			MCS11 VHT80/40
Middle Power/HE	2.4GHz FEM	3.45	16
Middle Power/HE	5GHz FEM	3.45	16

Cable DOCSIS 3.1 Switch



Parts	Operating Frequency (MHz)	IL (dB)	2nd Harmonics (dBc)	3rd Harmonics (dBc)
Switch 1	5~1794	0.1 @ 5MHz 0.3 @ 1000MHz 0.4 @ 1800MHz	-124	-134
Switch 2	5~6000	0.23 @ 5MHz 0.3 @ 1000MHz 0.3 @ 2000MHz	-111	-112
Switch 3	5~3000	0.35 @ 1000MHz 0.45 @ 1000MHz	-	-

WiFi RF Components for Automotive

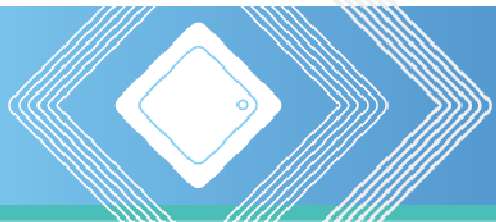
Power Level	Frequency Band	VCC (V)	Power (dBm)
			MCS9/MCS7
Middle Power	5GHz FEM	5	20
-	5GHz RX FEM	3.3	-
Middle Power	2.4GHz FEM	5	21
-	2.4GHz RX FEM- A	3.3	-
-	2.4GHz RX FEM- B	3.3	-
-	2.4GHz RX FEM- C	3.3	-
-	SP3T 2.4GHz	3~5	-
-	SPDT 6GHz	2.5~3.6	-

RF Motion Sensor

Category	Application	Motion Sensor
Smart Home	Smart Speaker	✓
	IP Camera	✓
	Light bulb	✓
	Gaming	✓
Smart City	Security alarm	✓

Module Name	PIR	RichWave
Size	Large	Small
Sensing distance	short	Any distance
Light immunity		V
Temperature Immunity		V
Lens-open ID	Must & limited inside-design	No Lens, flexible inside-design
Object-blocked immunity		V





RichWave