



立積電子股份有限公司

2017~2018年營運展望

民國106年12月21日

COMPANY OVERVIEW

SHANGHAI
SHENZHEN
SUWON
TAIPEI
CHUPEI

LOS ANGELES



Founded
Jan. 2004



Listed in TSE
Nov. 2015

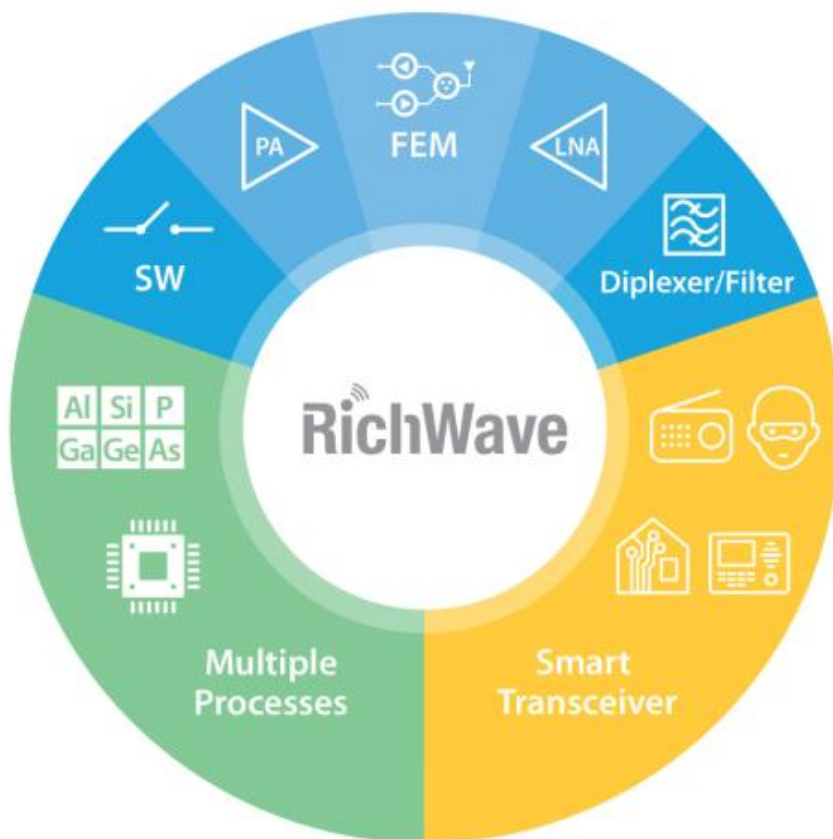


Customers
350



Products
270

持續創新與品牌認同



- 2008 Q3 **FOXCONN**
- 2011 Q3 **BROADCOM**
- 2012 Q1 **MARVELL**
- Q2 **LG Innotek** **SAMSUNG**
- 2014 Q4 **amazon.com** **HUMAX**
verizon
- 2015 Q4 **muRata**
- 2017 Q4 **TEXAS INSTRUMENTS**

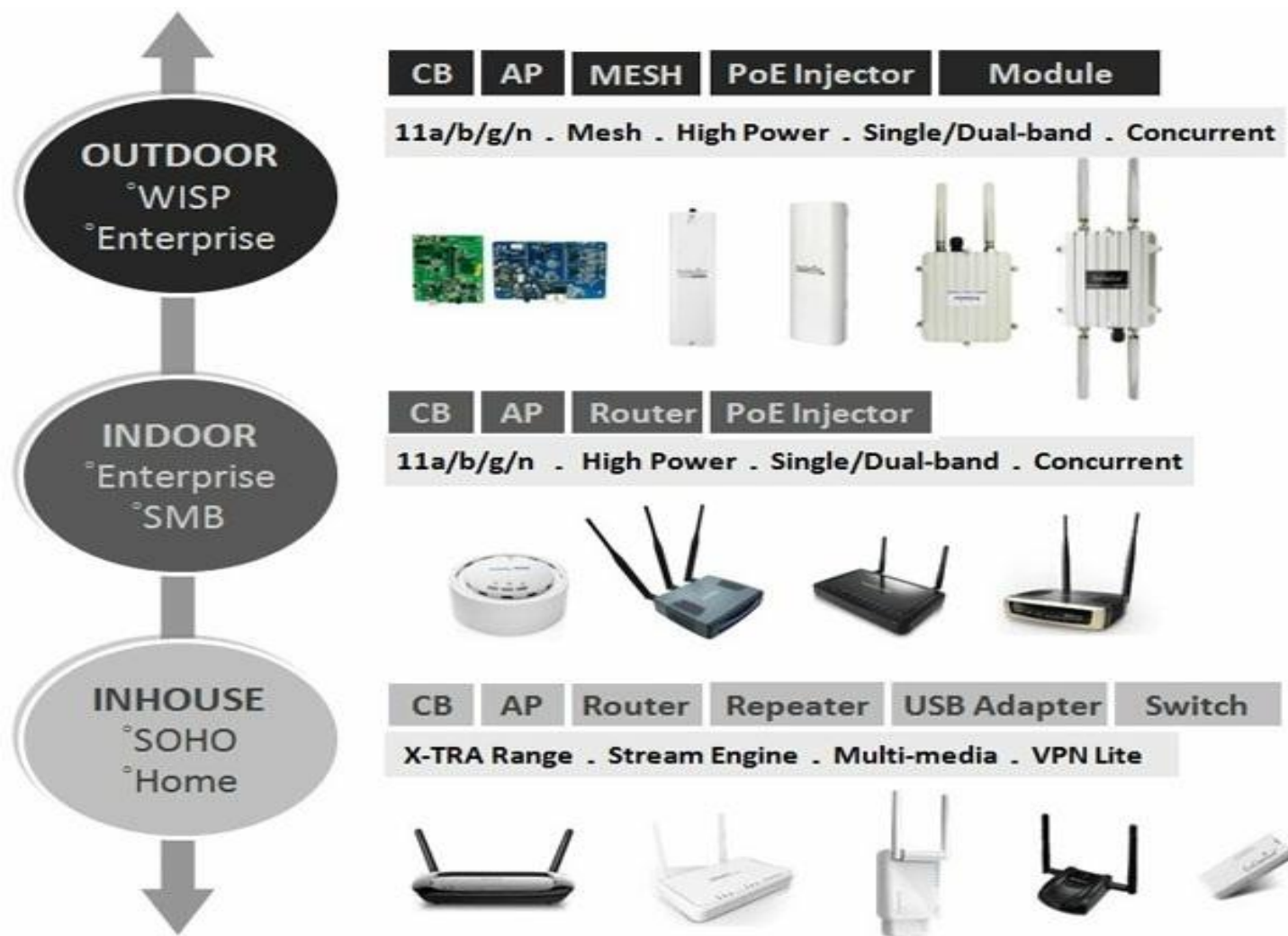
Wi-Fi在物聯網上的應用

Point to Multi-Point – Retail/Enterprise Outdoor/Indoor Applications



Source: SIPSS-GLOBAL

流量與覆蓋範圍不同 路由器滿足多元化需求



Source: SIPSS-GLOBAL

WiFi應用領域與品牌

Retail Router	• TP-Link, ASUS, Netgear, Belkin, Buffalo
Enterprise Router	• Cisco, HP/Aruba, HUAWEI
IP Cam	• Hike-Vision, Netgear, Nest
STB/ OTT	• Roku, Xiaomi
Gaming	• Nintendo, SONY, Microsoft
Smart Speaker	• Amazon, Google, Harman, Xiaomi, Alibaba
Smart TV	• Samsung, LG, Xiaomi
Smart Phone	• ASUS, Samsung, LG, TCL, Xiaomi, Meizu
Automotive	• KOR/JPN module companies
AI/ Robotics	• ASUS- Zenbo, Softbank- Pepper, Anki- Cozmo
IoT	• Gemtek, Azureware, WNC, Fujitsu, Panasonic



未來3年全球WiFi成長率 聚焦亮點產業

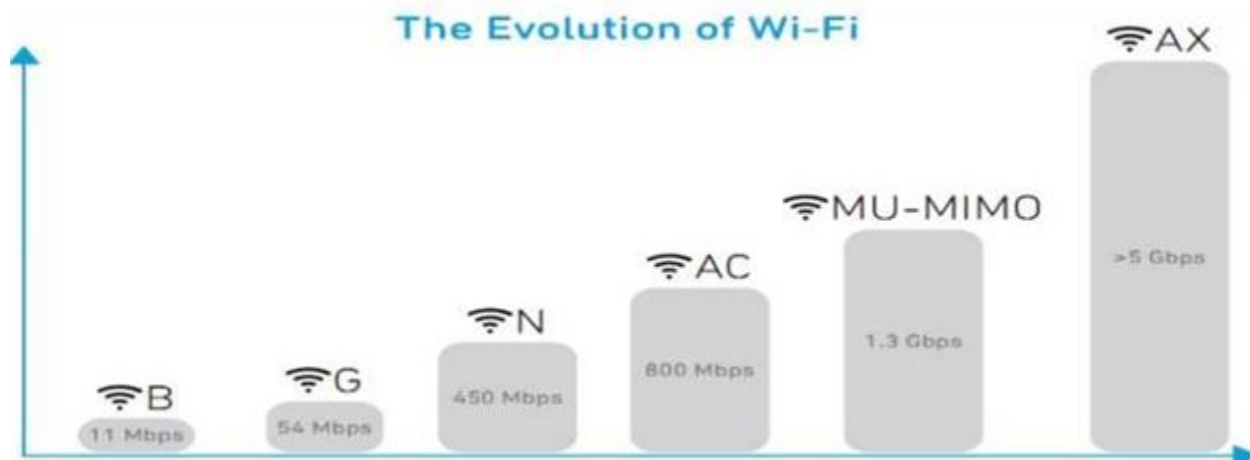
2017 WiFi RFFE 全球市佔約8%

SW全球市佔約40%

Segments	2017 (f)	2020 (f)	Growth (%)	Remarks
AP Router (DSL, Cable, PON)	350	400	14%	M units
STB/OTT	380	460	21%	M units, 2020
Smart Phone	1,517	1,697	11.91%	M units
Game Consoles	135.2	184	36%	M units
Smart Speaker	8.3	94	1075%	M units, 2016
IoT	20,000	30,000	50%	M units
Smart TV	104	114	9.6%	M units, 2018
Smart Home	65	320	392%	M units
Automotive (info..)	1,062	7,914	645%	US\$M, 2016
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

Wi-Fi標準11.ac /11ax Speed & Capacity 倍增 MIMO需求倍數成長

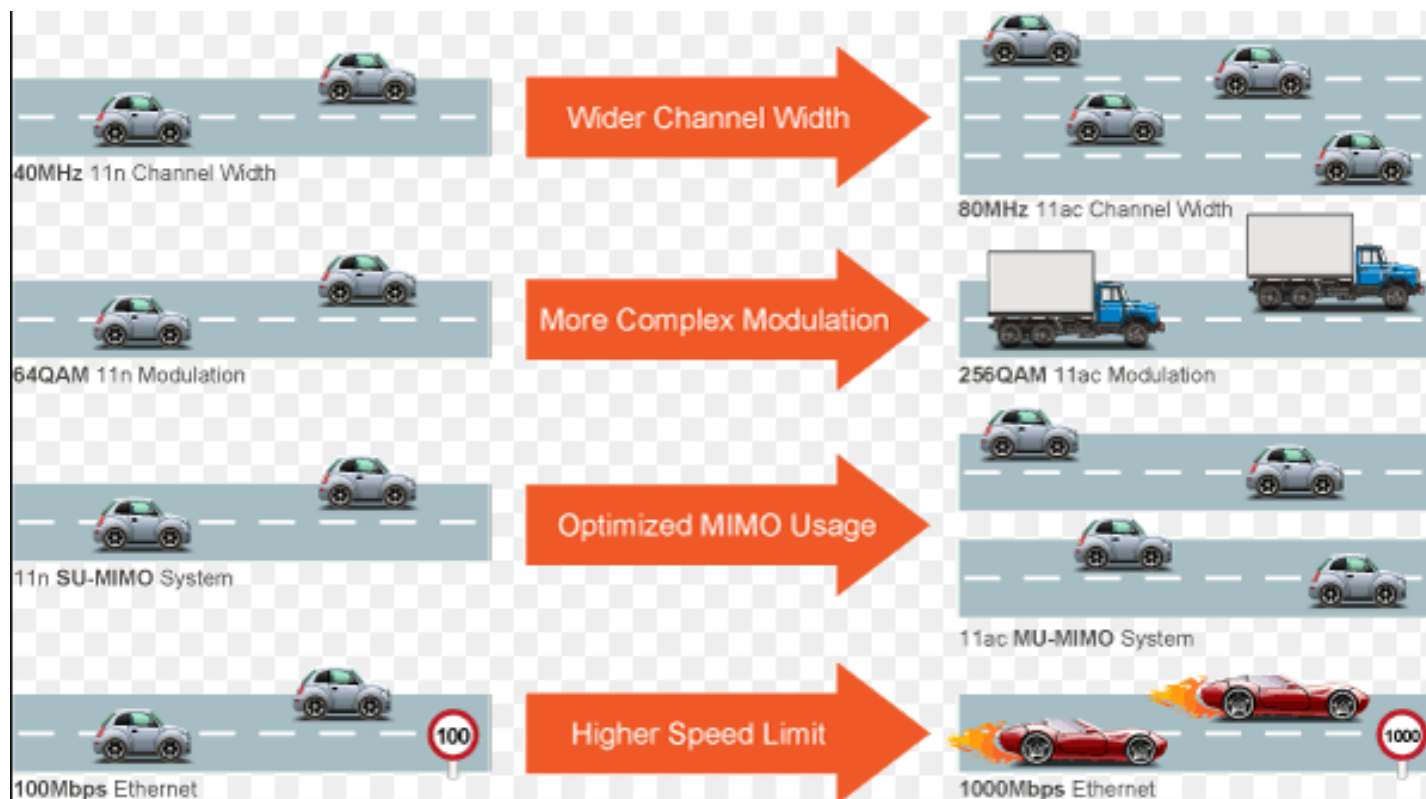


	802.11g	802.11n	802.11ac	802.11ax
使用頻段	2.4GHz	2.4GHz和5GHz	5GHz	2.4/5 GHz
使用頻寬	20MHz	20MHz 40MHz	20MHz 80MHz 40MHz 160MHz	20MHz 80MHz 40MHz 160MHz
最高天線數	1x1 SISO	4x4 MIMO	8x8 MIMO(MU-MIMO)	12x12 MIMO
現有標準速度 (理論值)	54Mbps	150Mbps 300Mbps 450Mbps (頻寬40MHz)	433 Mbps 867 Mbps 1300 Mbps (頻寬80MHz)	600.4 Mbps 9607.8 Mbps
最高速率(理論值)	54Mbps	600Mbps	6.93Gbps	9.6 Gbps

Source: adrenaline.uol.com.br

WiFi技術演進：從11n到11ac

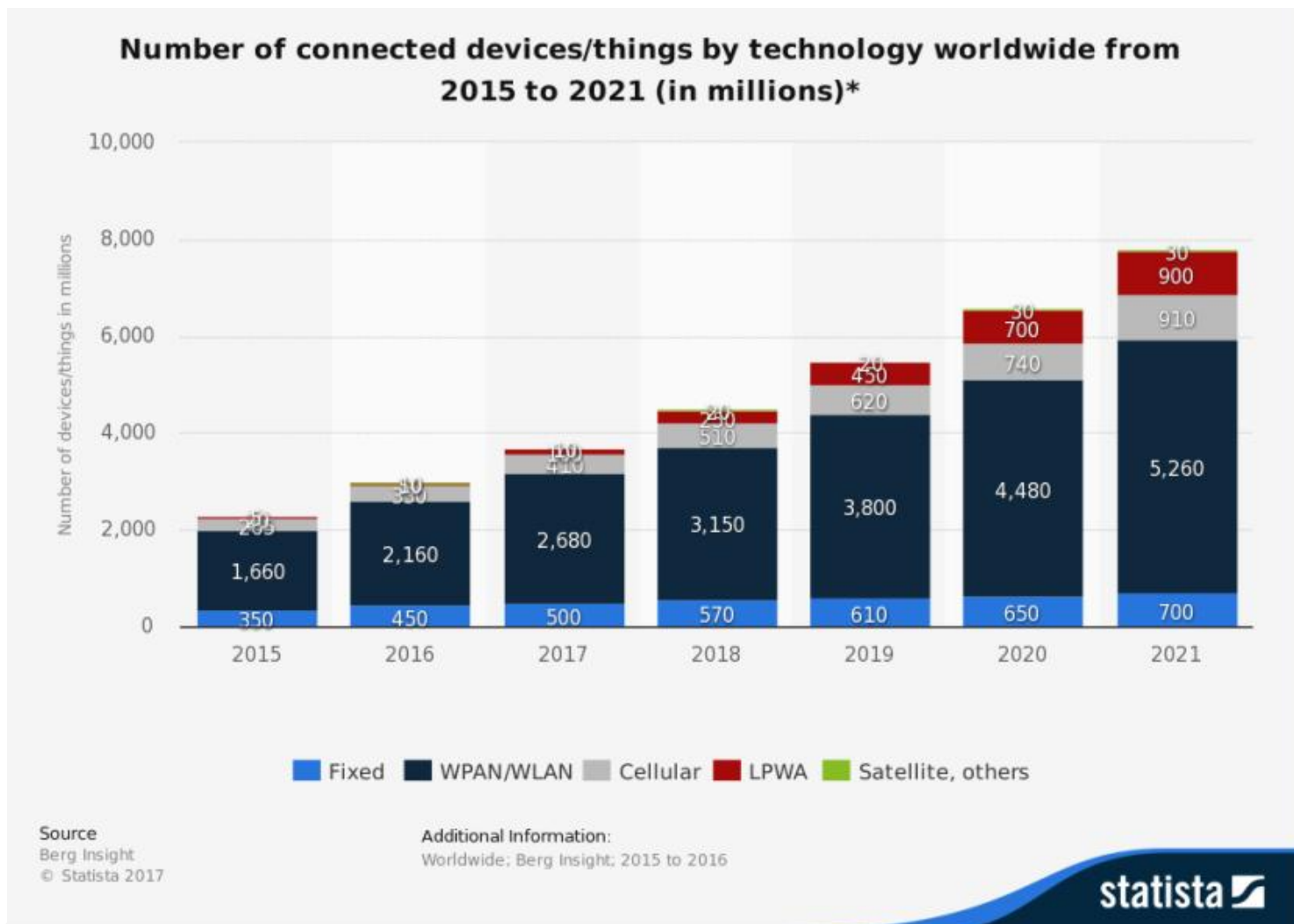
頻寬加倍，調變高密和MIMO加大流量



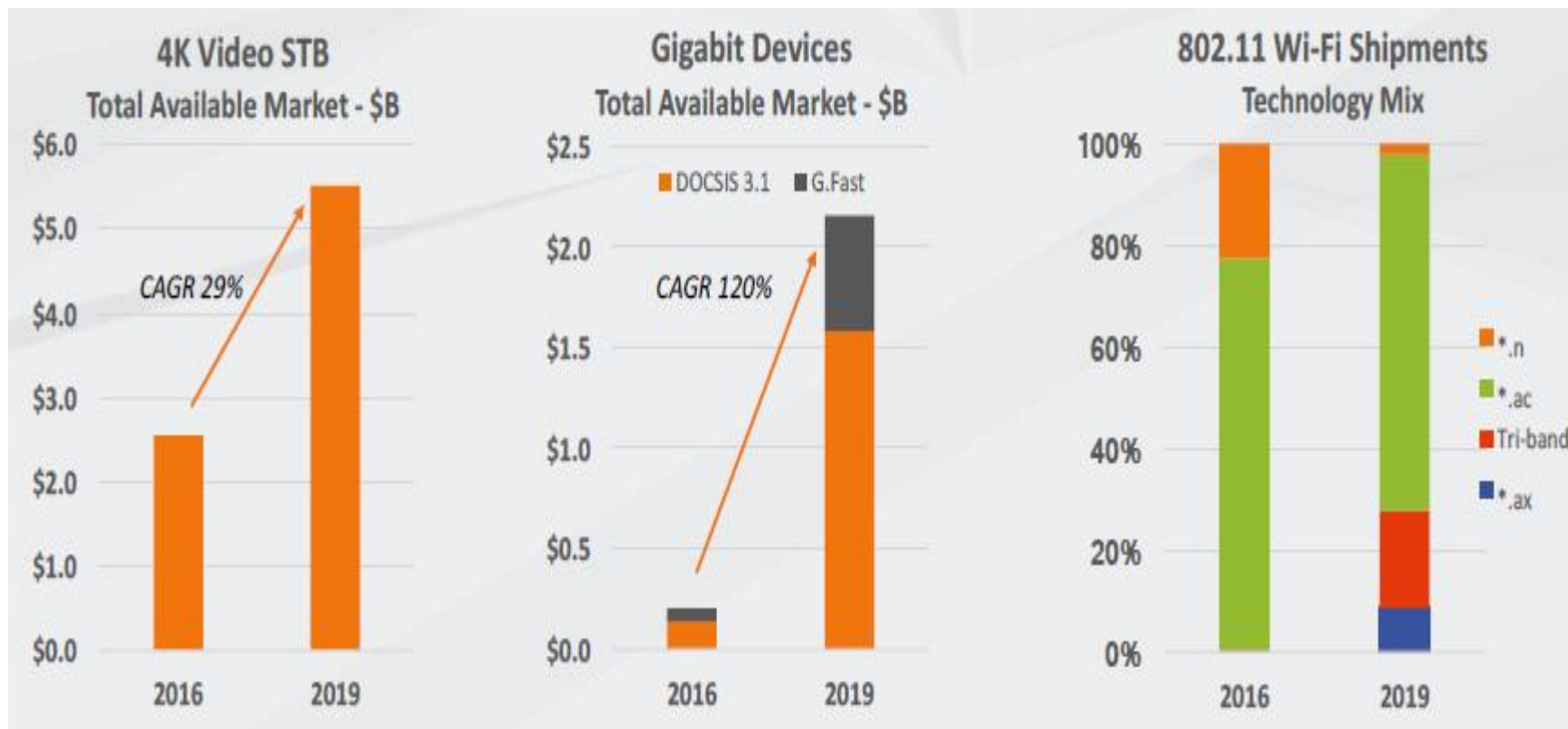
Go faster in wired & wireless

Take Advantage of 11ac to Optimize Data Link Speed

WiFi設備因應全球連接點數倍增

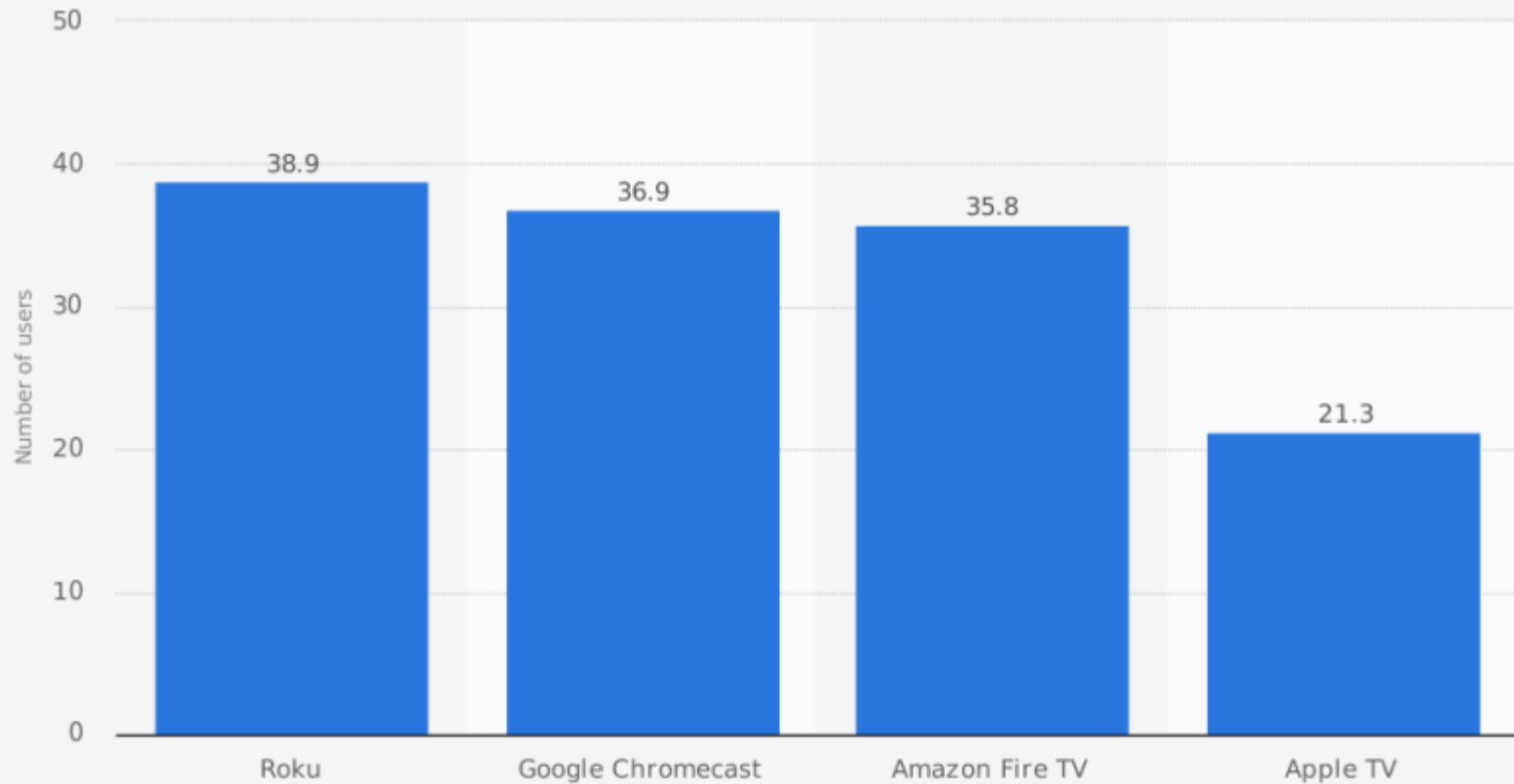


Cable/ STB整合Wi-Fi技術帶來頂級無線體驗



Source: ARRIS Investor Day 2017

Number of connected TV users in the United States as of July 2017, by brand

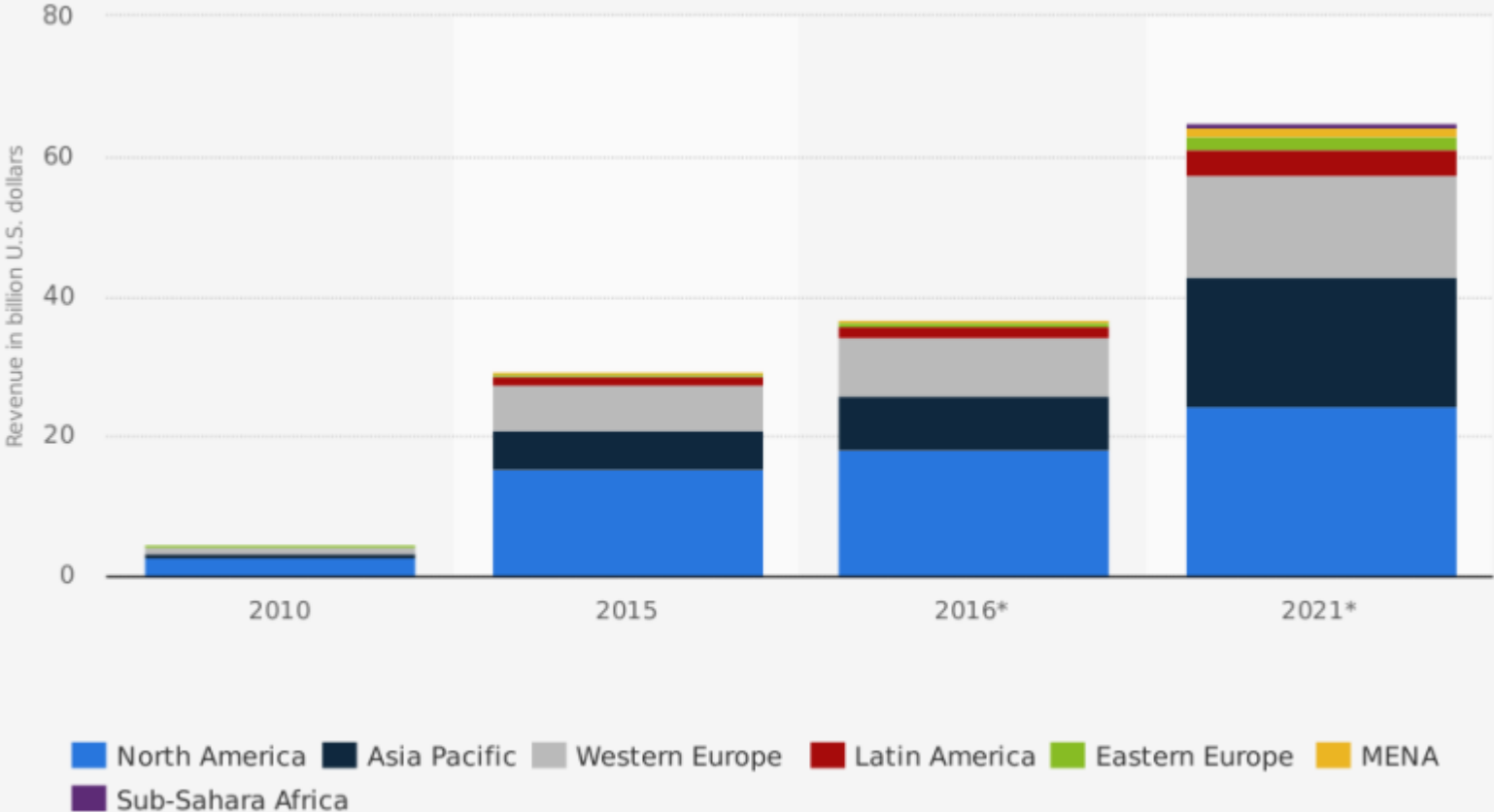


Source
eMarketer
© Statista 2017

Additional Information:
Worldwide; July 2017; based on individuals of any age who use the internet through each device at least once per month

statista

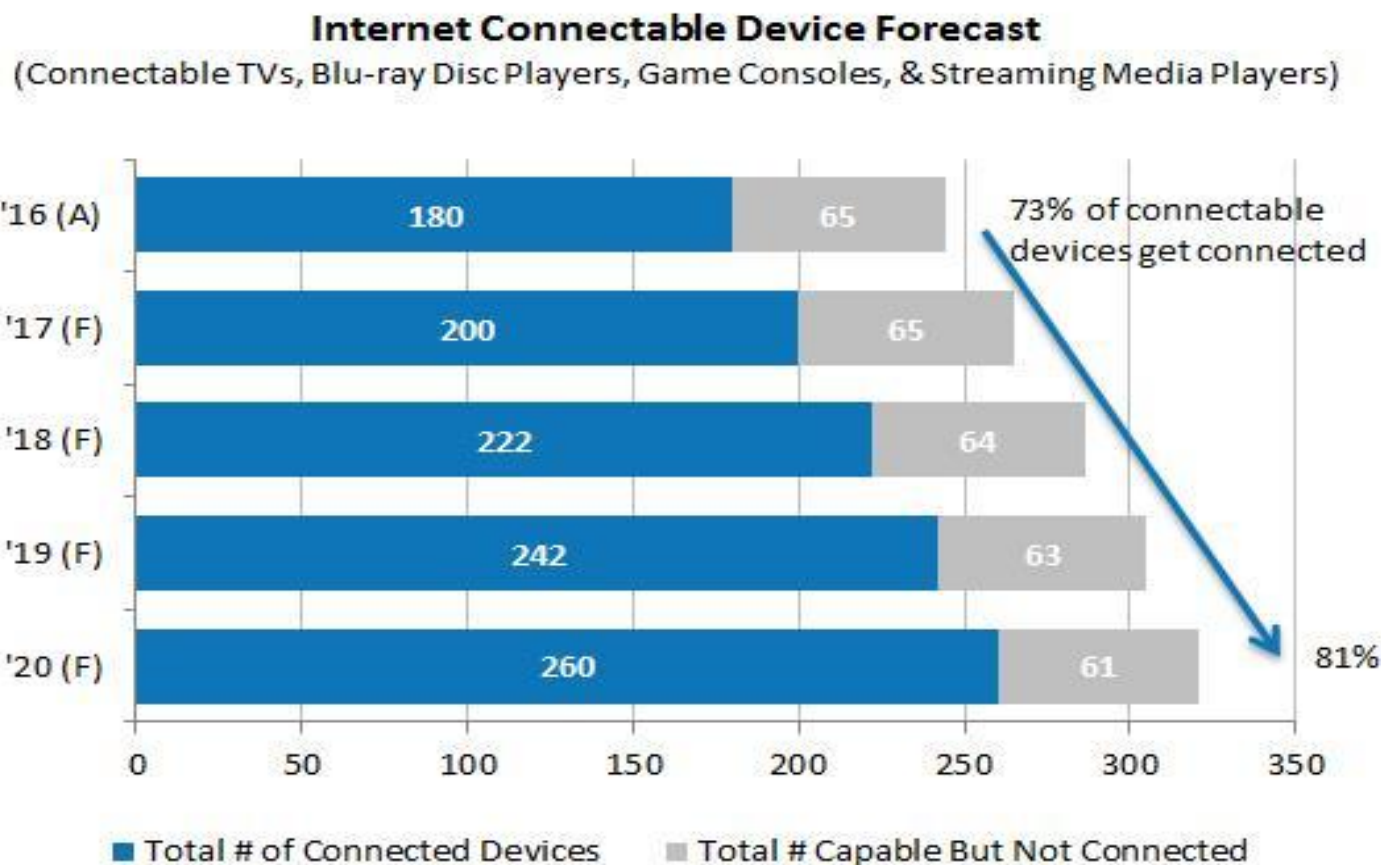
Over-the-top (OTT) TV and video revenue worldwide from 2010 to 2021, by region (in billion U.S. dollars)



Source
Digital TV Research
© Statista 2017

Additional Information:
2010 and 2015

居家影音享受激勵WiFi連接快速增加

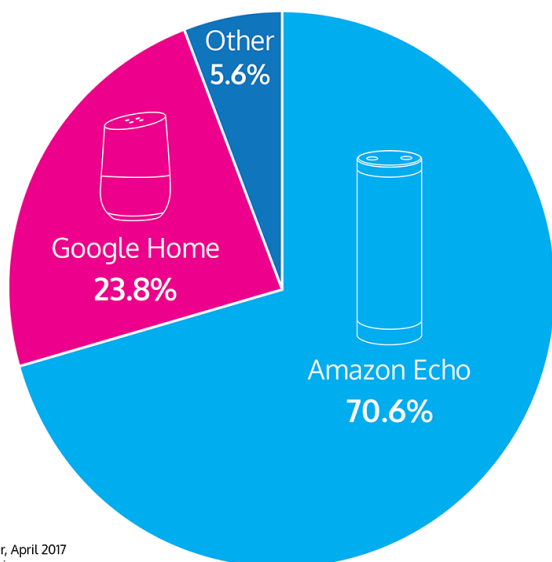


Base: U.S. Internet households

Source: The NPD Group/Connected Intelligence, TV-Connected Device Forecast
Includes a small percent of game consoles that are non-connectable

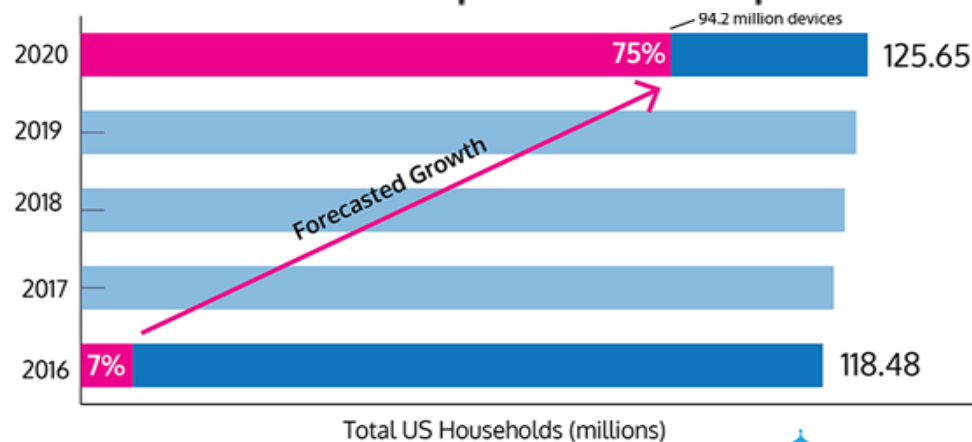
WiFi智能音箱未來連接OTT加速增長

US Voice-Enabled Speaker User Share by Player, 2017



Source: eMarketer, April 2017
Image: Voicebot.ai

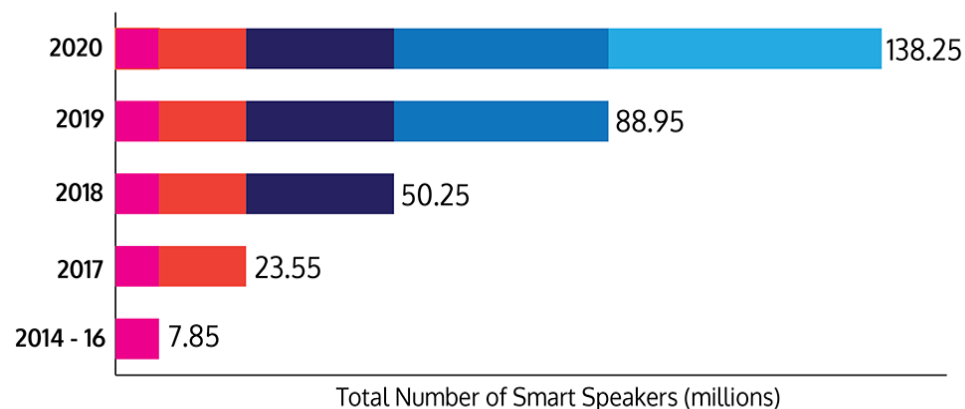
US Household Smart Speaker Ownership 2016-2020



Source: US Census, Gartner, Edison Research, Voicebot.ai



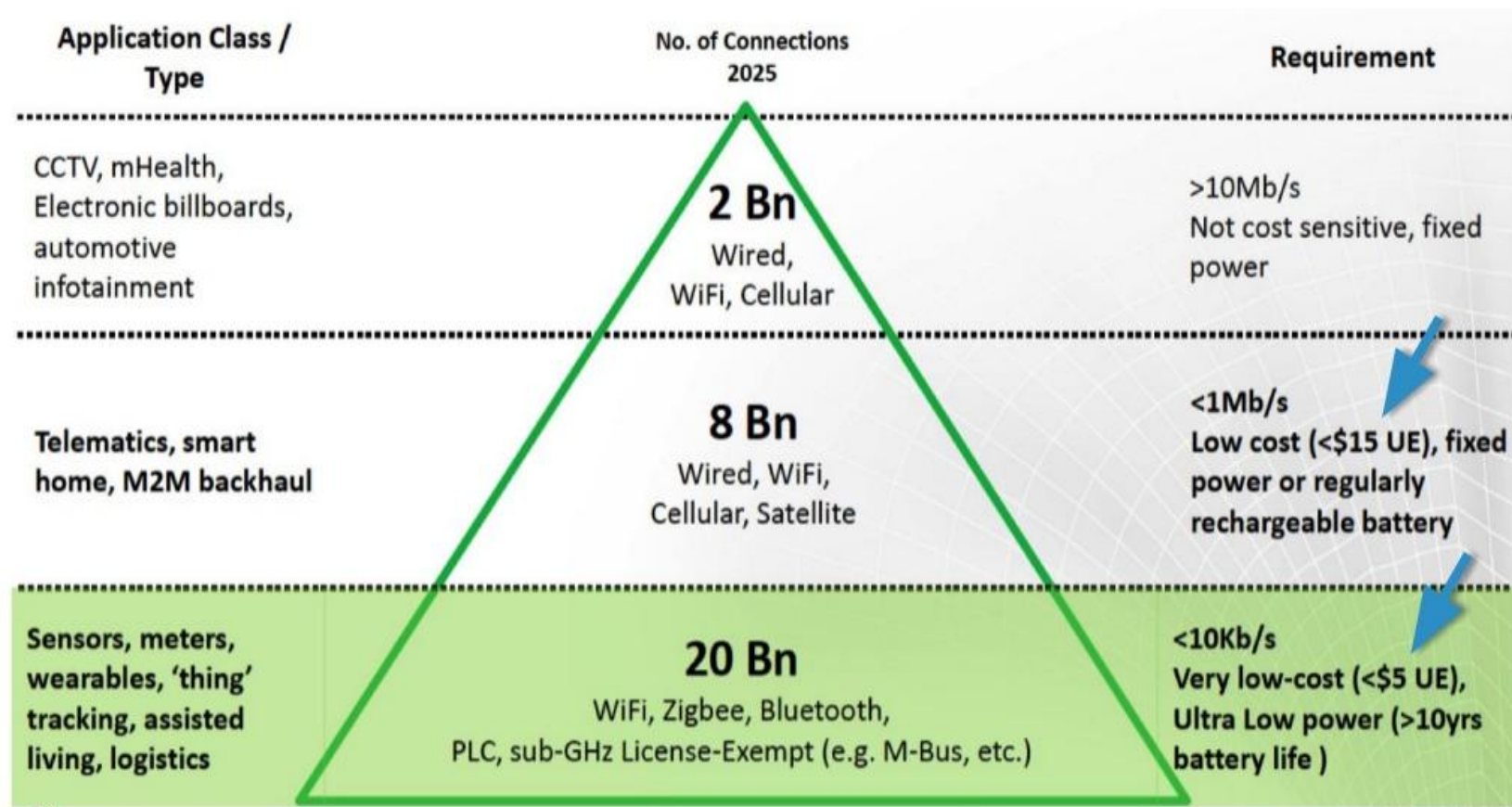
US Smart Speaker Installed Base - 2016 to 2020



Source: CIRP, VoiceLabs, Statista, Edison Research, Voicebot.ai



WiFi無處不在 從IOT、家庭、M2M到雲端





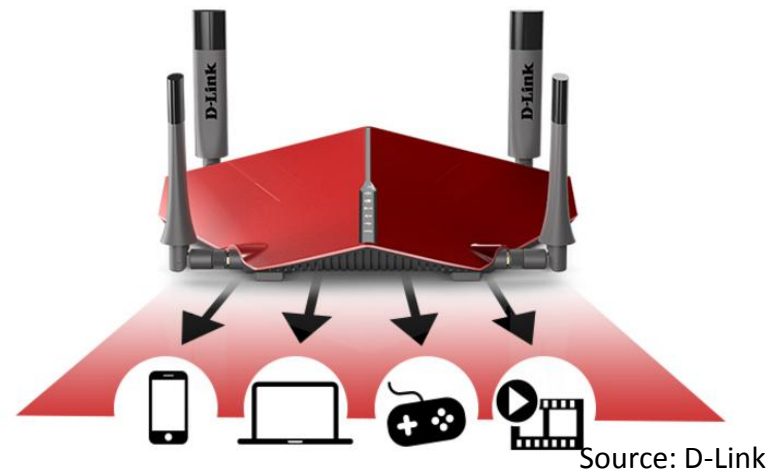
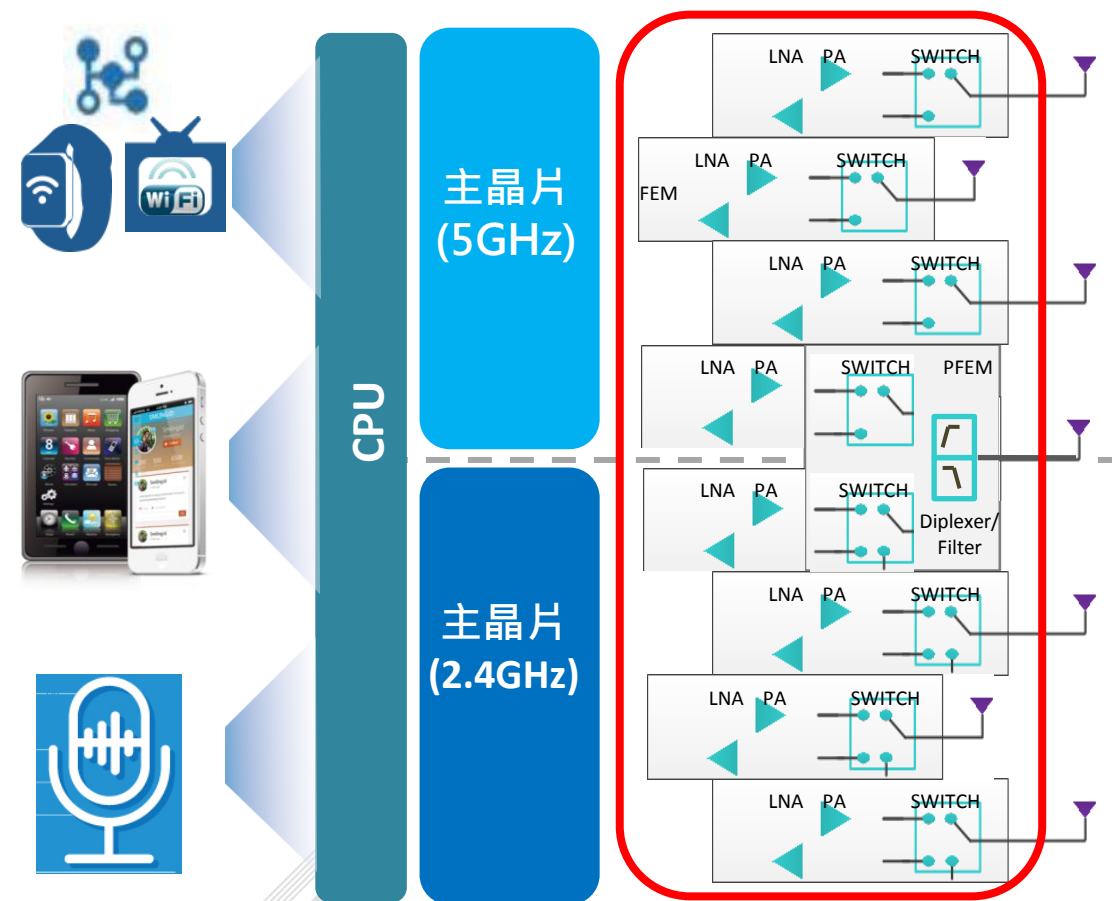
Growth Strategy & Advantages

擁有主晶片廠超過100項參考設計認證



WiFi 解決方案 MU- MIMO 帶動射頻前端元件需求增加

WiFi RFFE is Key for Performance: MU- MIMO Features Increase # RF Front End
PA for range, LNA for Sensitivity. RFFE Quantity Proportional to MIMO



Antenna output	5GHz 11ac	5GHz 11n	2GHz 11ac	2GHz 11n
PA/LNA/SW	V	V	V	V
FEM (PA+LNA+SW)	V	V	V	V
FEM(LNA+SW)	V	V	V	V
Enterprise FEM (PA+LNA+SW)	V	V	V	V
Mobility FEM (PA+LNA+SW)	V	V	V	V

WiFi 802.11ac的性能與競爭對手比較

Output Power

高中低功率產品：不分軒輊，性能勝出！

H



Video Stream



Data Connected



Set-top box



Data Connected



IOT

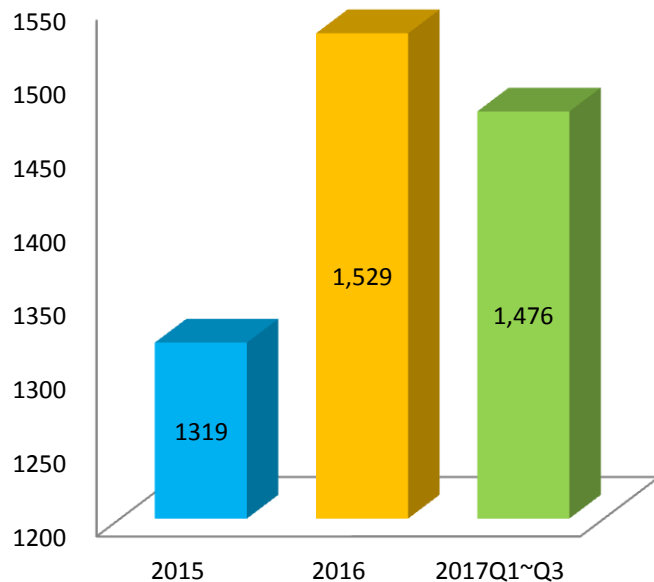
		Parameter	RichWave	Ref.
5GH FEM	H	Pout @1.8% EVM	22.5dBm	22.5dBm
	M	Pout @1.8% EVM	20dBm	19dBm
	L	Pout @1.8% EVM	16dBm	16dBm
2GHz FEM	Pout @3% EVM		27dBm	26dBm

L

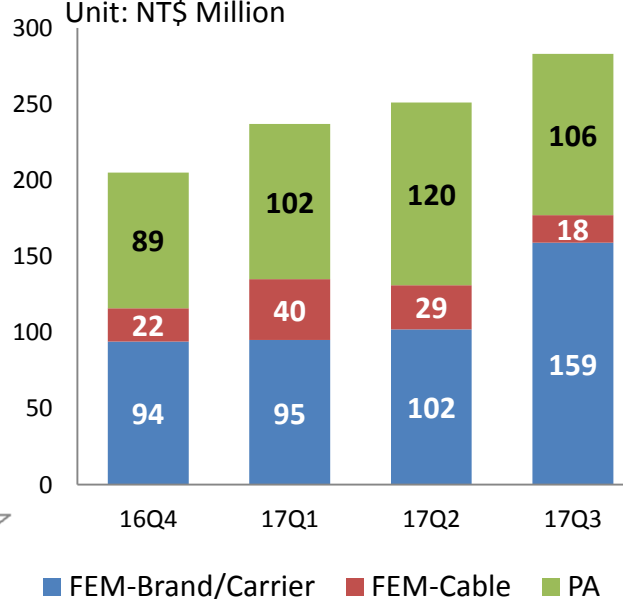
Wi-Fi年成長超過30% 全球市佔目標坐三望二

- 2017Q3 FEM 的季增長超過55%，在於品牌/電信運營商增加802.11ac的經營
- 2017Q3 WiFi季增長14%，年增長30%以上。
- 11ac在全球驅動下，覆蓋範圍擴大，增加MIMO 2x2和3x3的需求成長。

Unit: NT\$ Million

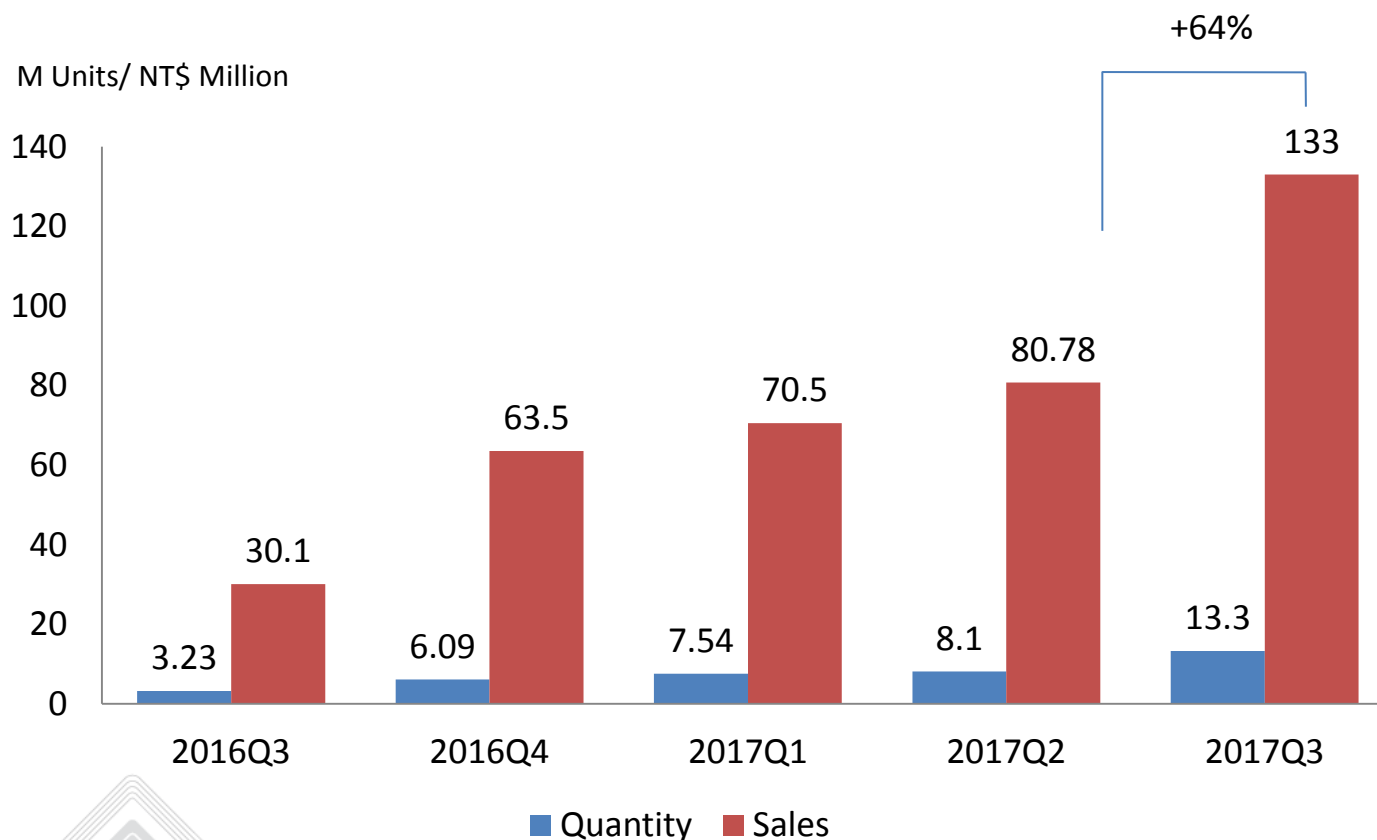


Unit: NT\$ Million



FEM在全球市場領導品牌之 路由器和STB / OTT布局

- 品質與性能達世界水平，進攻中國&歐美市場，全面布局
- Q4營收在中國&歐美區域放量增加



續攻美國、中國品牌智慧音箱

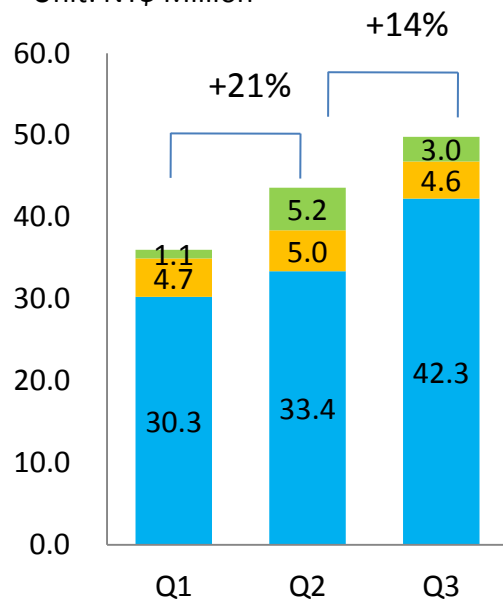
- Amazon Echo娛樂語音助理到辦公室智慧助理時代即將到來！
- 小米AI音箱【小愛同學】融入小米家族 可控制8500萬IoT設備，創造「IoT+AI」生態體系。



LTE贏得中國第一品牌27%的增長

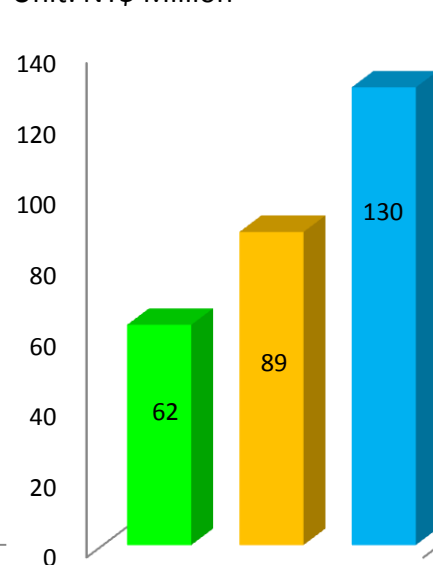
- LTE SW季增長27%，主要攻入中國第一手機品牌供應鏈

Unit: NT\$ Million



■ LTE SW ■ LTE LNA ■ Femtocell

Unit: NT\$ Million



■ 2015 ■ 2016 ■ 2017Q1~Q3



Top Five Smartphone Companies in PRC, Shipments, Market Share, and Year-Over-Year Growth, 2017Q1 Preliminary Data (Units in Millions)

Company	2017Q1 Shipment Volumes	2017Q1 Market Share	2016Q4 Market Share	2016Q1 Market Share	Year-Over-Year Unit Change (2017Q1 over 2016Q1)
Huawei	20.8	20.0%	16.8%	16.0%	25.5%
OPPO	18.9	18.2%	18.1%	15.3%	19.5%
vivo	14.6	14.1%	16.0%	13.2%	7.6%
Apple	9.6	9.2%	11.0%	12.7%	-26.7%
Xiaomi	9.3	9.0%	7.4%	9.8%	-7.5%
Others	30.8	29.6%	30.7%	33.0%	-9.6%
Total	104.1	100%	100%	100%	0.8%

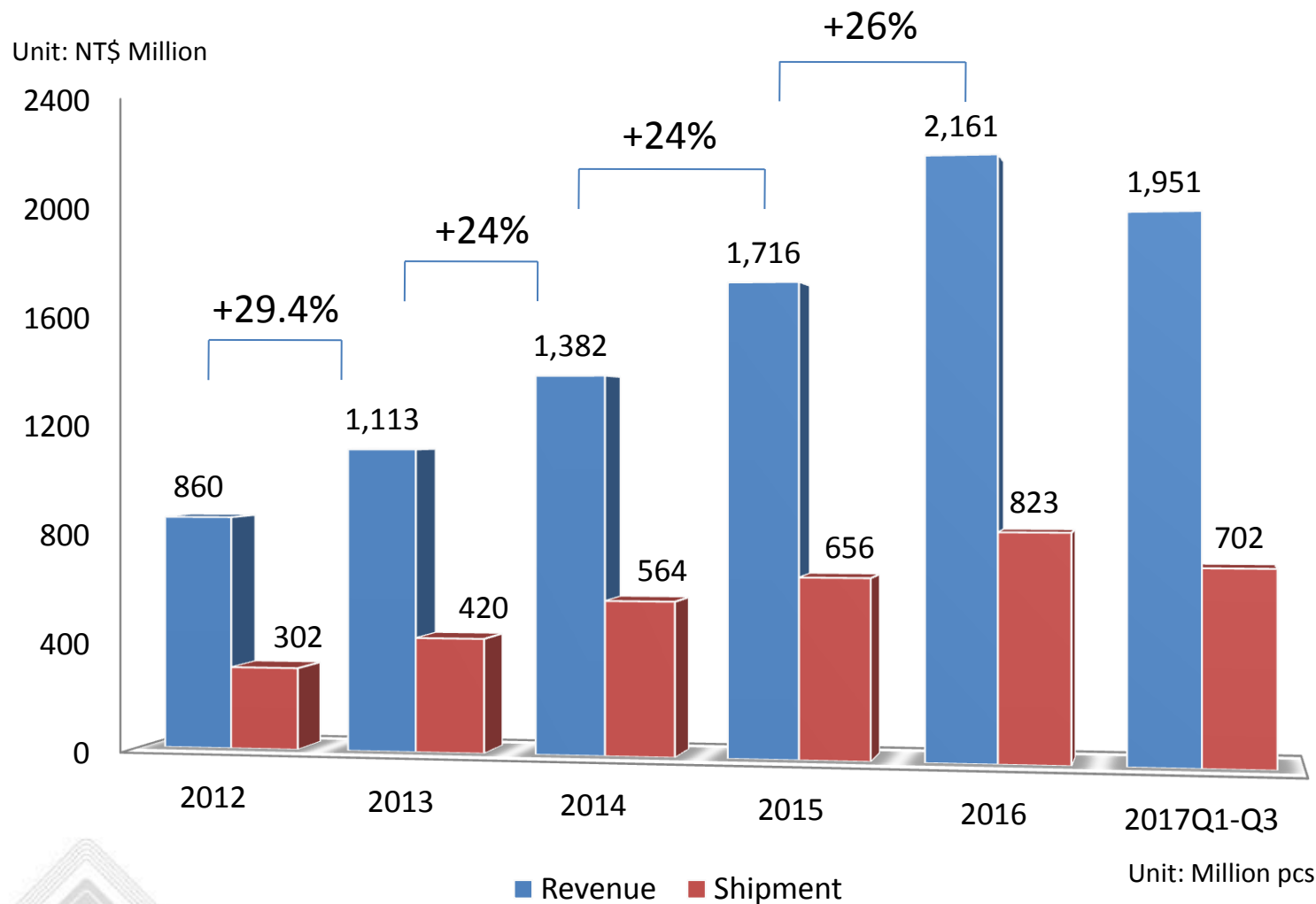
Source: IDC Quarterly Mobile Phone Tracker, May 4, 2017

SoC持續放量出貨

- FM 晶片在韓國旗艦手機後持續進攻
- 無線影音傳輸晶片用於智慧家庭、物聯網、無人機、倒車後視...的長距離應用。



連續5年營收>20%成長



產品組合與營收比例 WiFi FEM加速成長

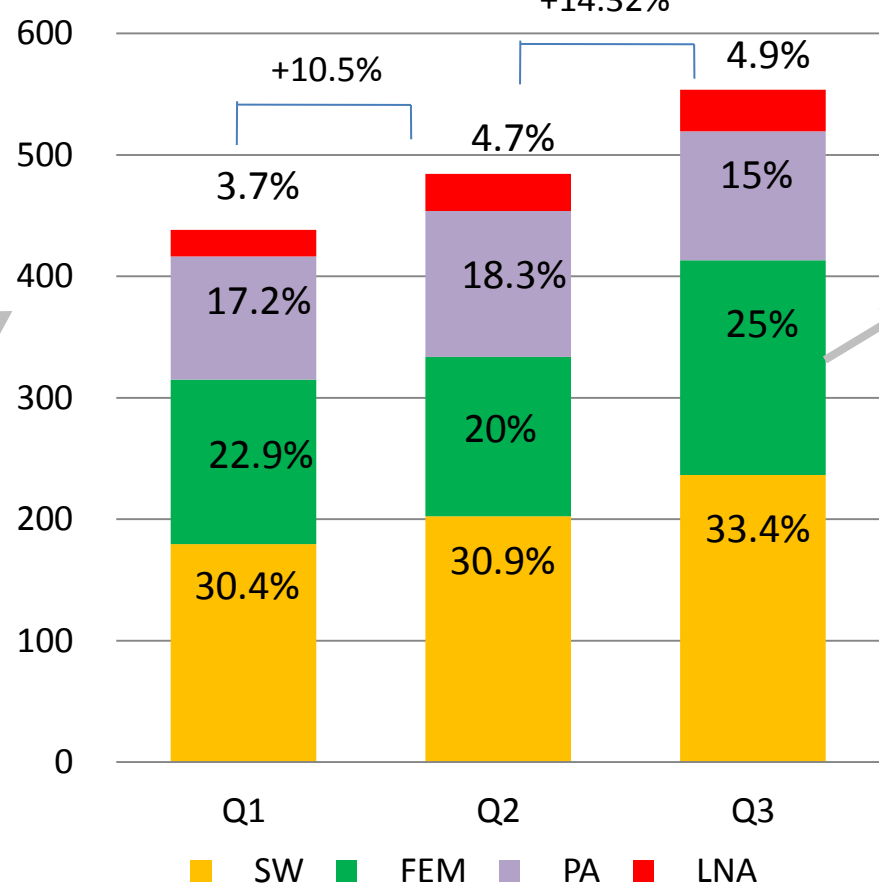
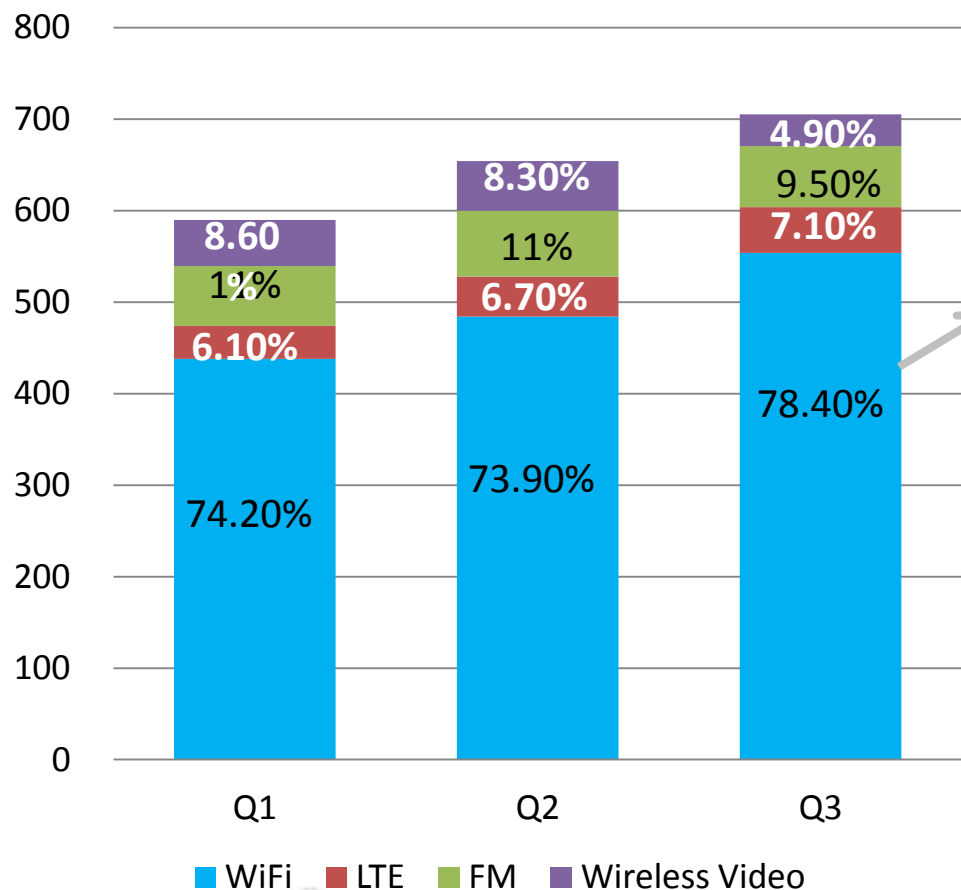
Unit: NT\$ Million

Product Portfolio

Unit: NT\$ Million

Wi-Fi 產品組合與比例

+14.32%



產品組合轉向高階PA和FEM攻佔市場