



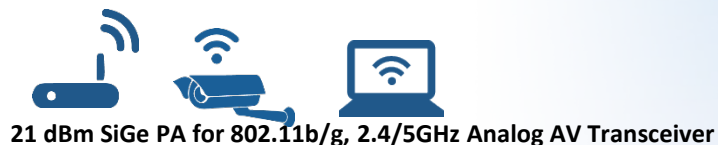
RichWave Technology Corp. Investor Presentation

June 2017

Company Overview

- A leading & innovative wireless RF IC design company
- Founded: January 2004
- Listed in TSE: November 2015
- Capital: NT\$549 millions
- Products Evolution:

2005~2007



21 dBm SiGe PA for 802.11b/g, 2.4/5GHz Analog AV Transceiver

2008~2011



WiFi Switch, GaAs HPA, FEM for 802.11b/g/n, 2.4GHz Digital FM Transceiver, SoC for MP4 Video Codec

2012~2017



WiFi FEM, PA, Switch, LNA for 802.11ac, LTE SW& LNA in Cellular 3G/4G, Femto, Surveillance Transceiver, Digital FM/AM Tuner

Shenzhen

Taipei
Chupei

Shanghai

Suwon

Expanding Portfolios and Scope

Technologies

SOI CMOS
SiGe GaAs



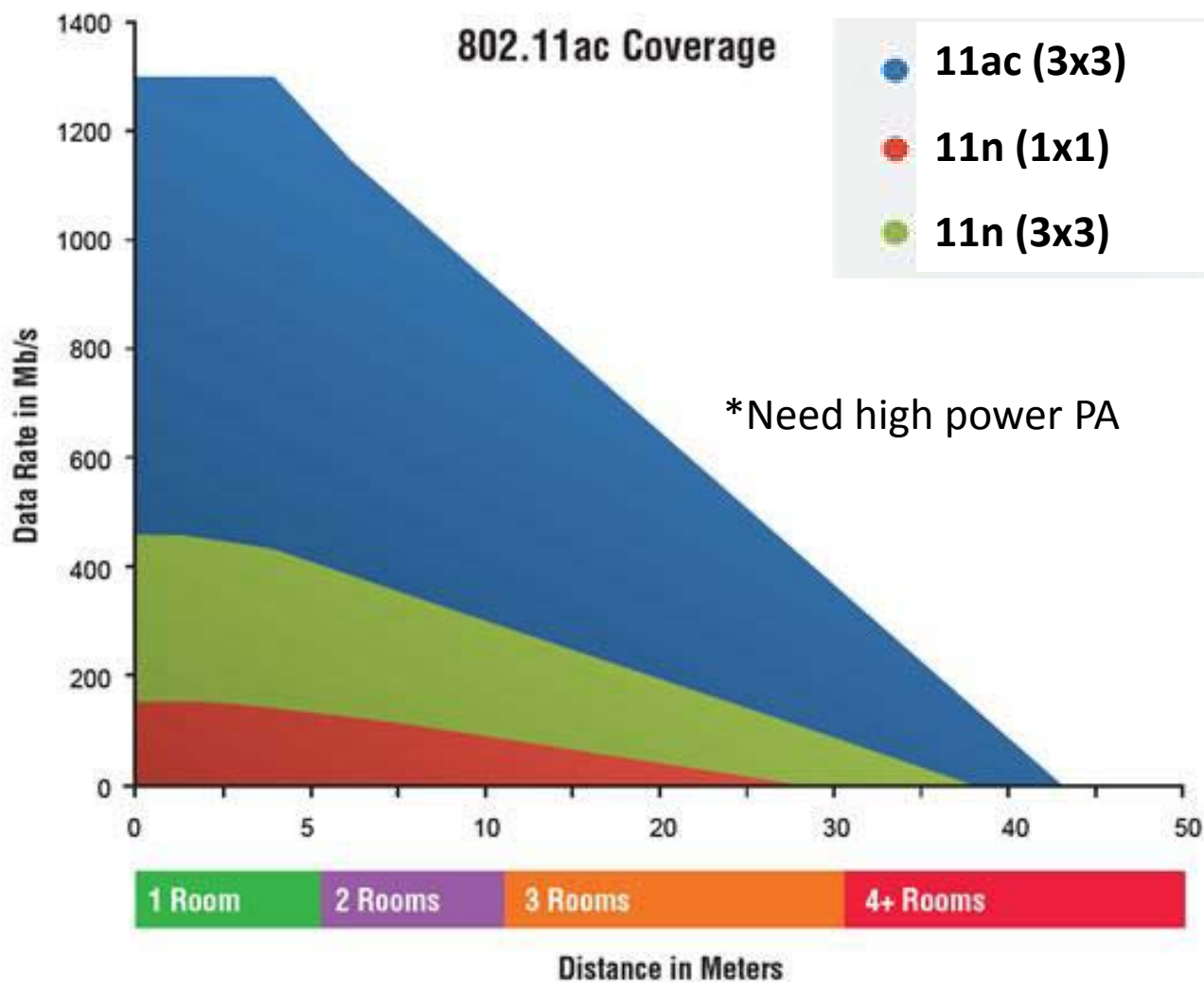
Products

Power Amplifier
Low Noise Amplifier
Switch
Front-End Module
Antenna Tuner
FM/ AM
Wireless Video

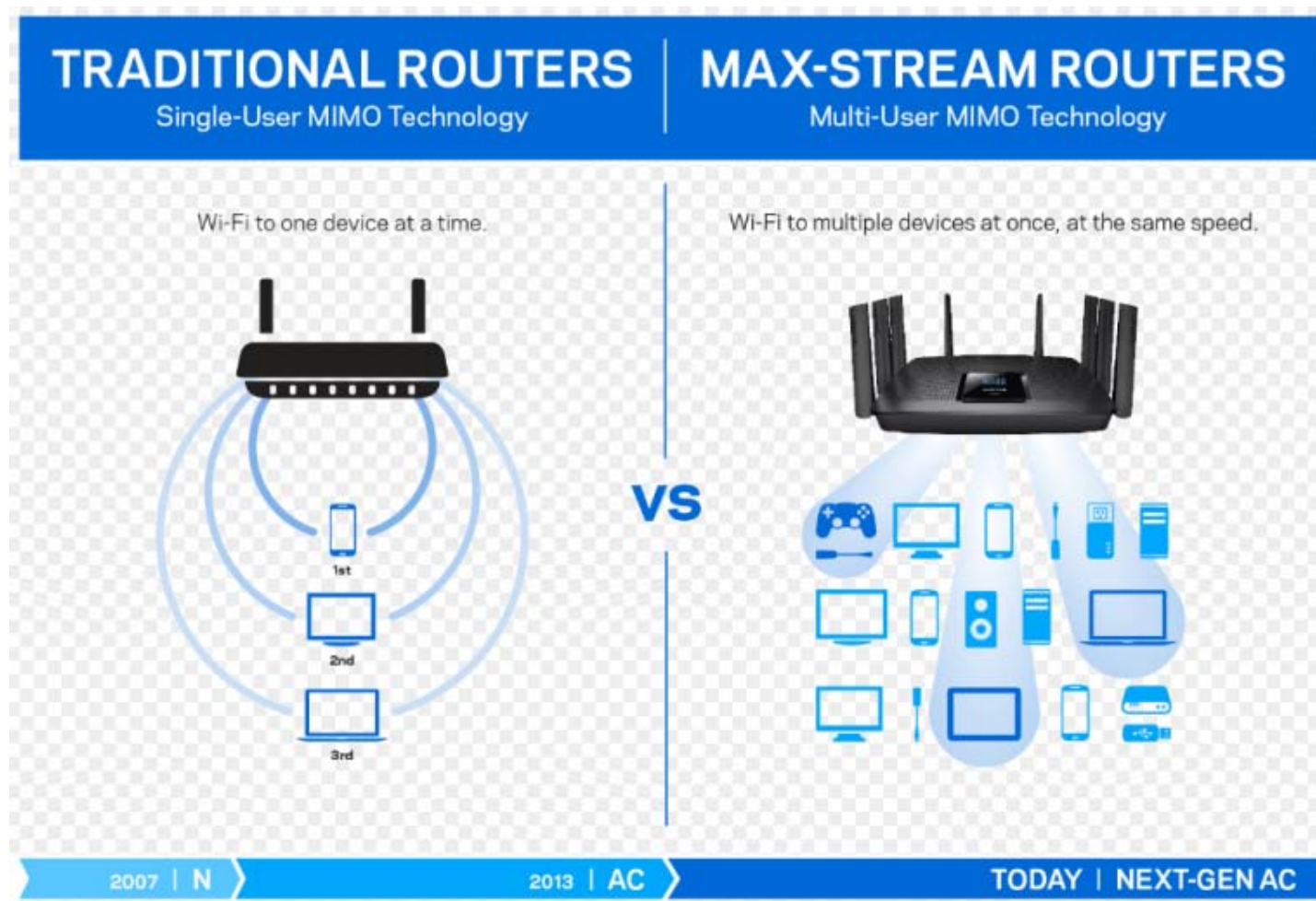
Scope

350 Customers
200 Patents
270 Products
80M pcs/month
shipping

11ac Boost RF Components Demand

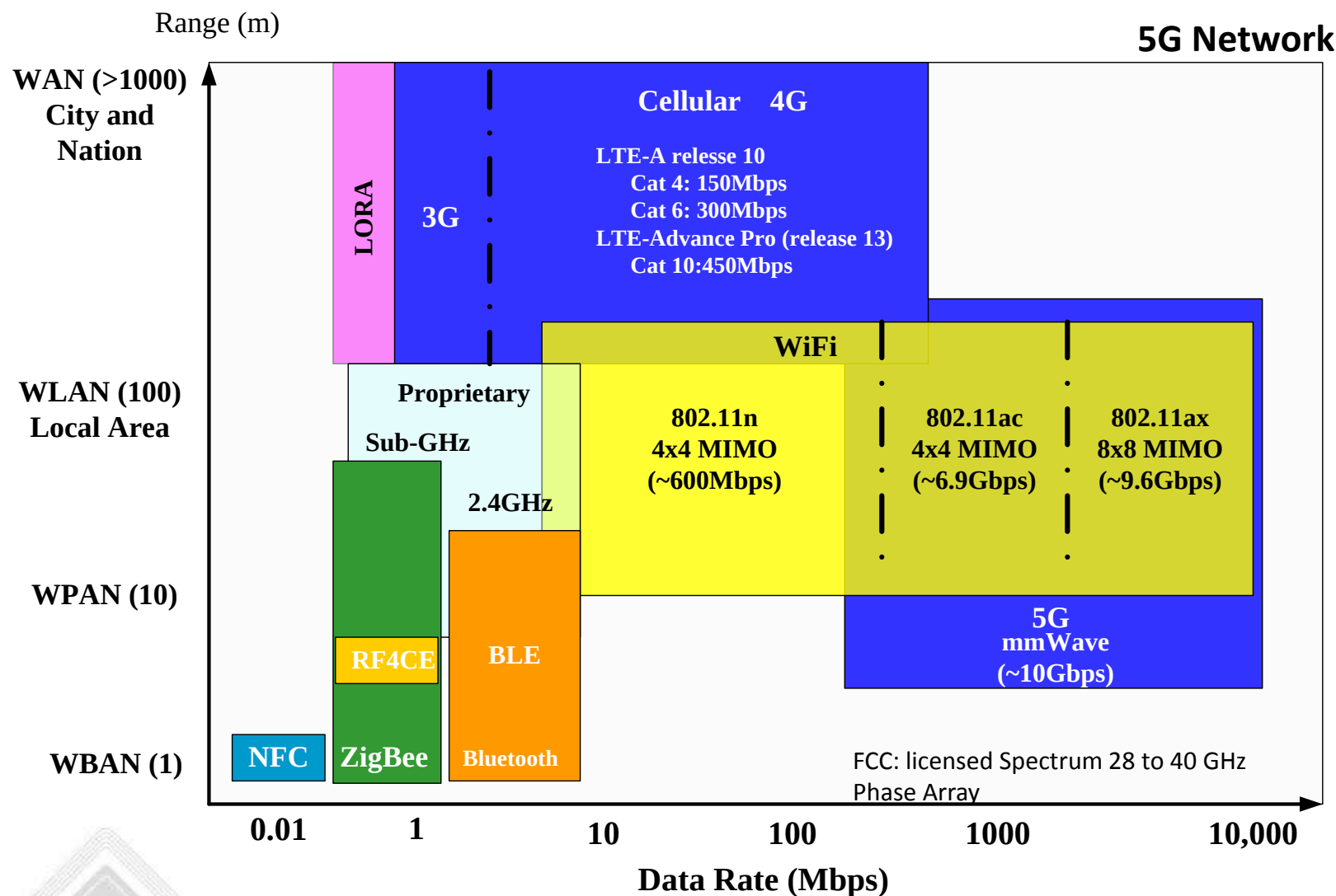


MU-MIMO Requires More RF Frond-end

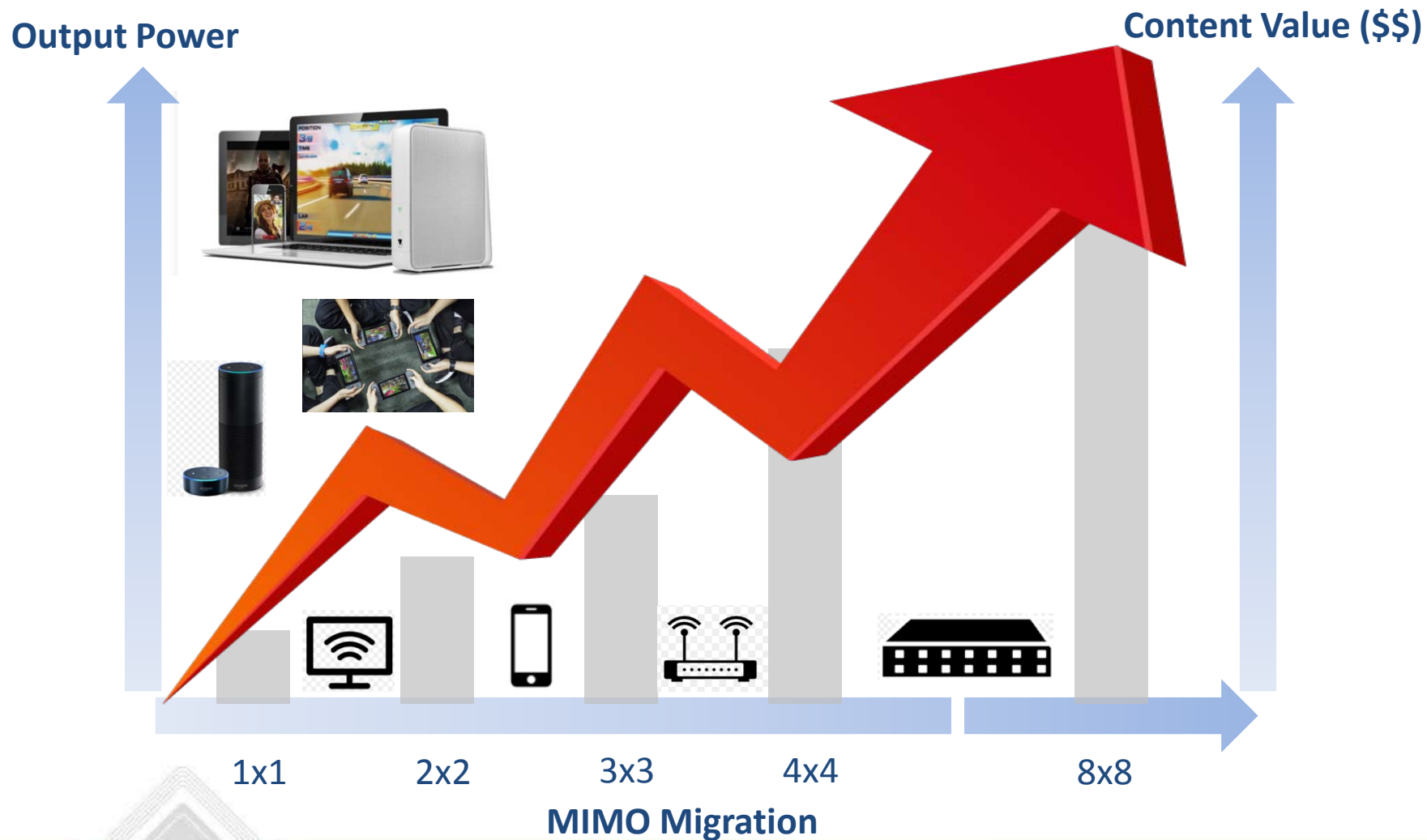


Source: Linksys

Today's Wireless Landscape



Content Value Increasing



IEEE 802.11 wireless LAN Standard—802.11ax (HEW)

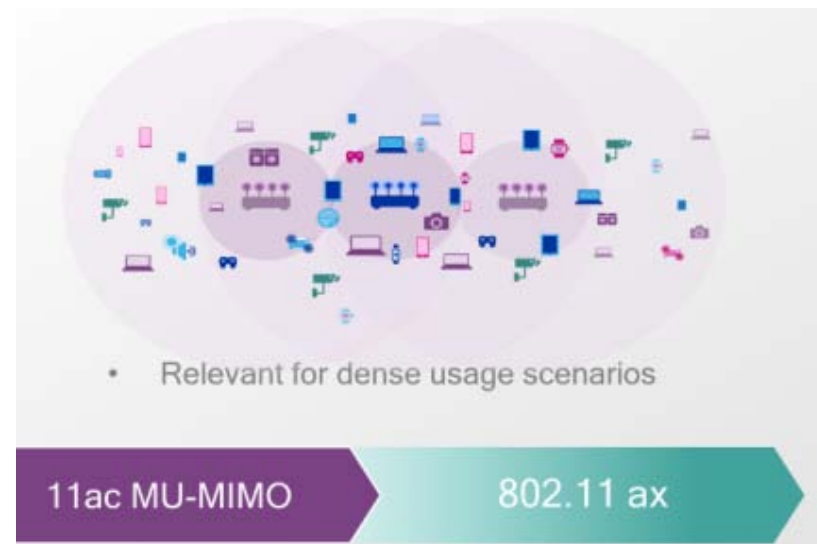
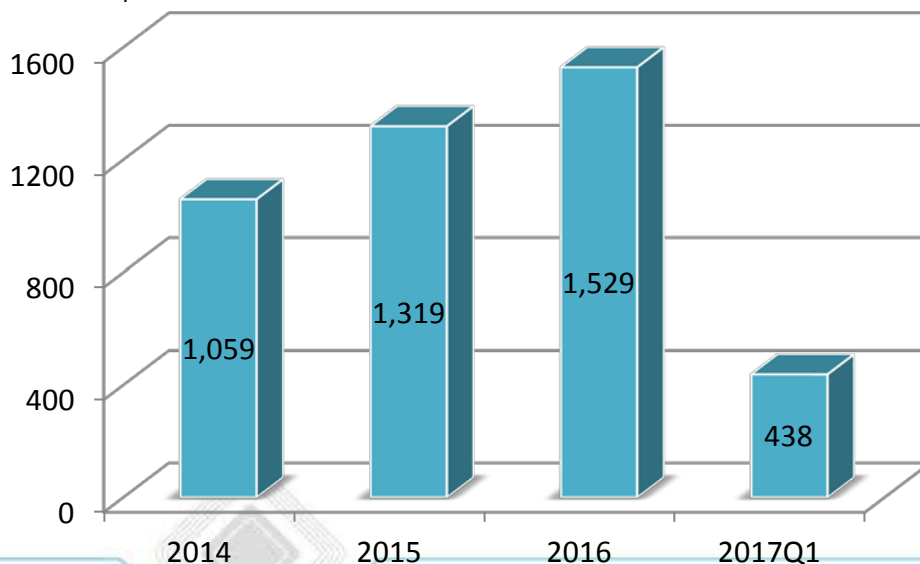
802.11ax HEW (High Efficiency WLAN)

802.11ax vs. 802.11ac PHY		
SPEC. ITEMS	802.11ac	802.11ax
Frequency Bands (GHz)	5	2.4 and 5
Channel BW (MHz)	20, 40, 80, 80+80, 160	20, 40, 80, 80+80, 160
FFT Size	64, 128, 256, 512	256, 512, 1024, 2048
Subcarrier Spacing (KHz)	312.5	78.125
OFDM Symbol Duration (us)	3.2+0.8/0.4 CP	12.8+0.8/1.6/3.2 CP
Highest Modulation	256QAM	1024QAM
Data Rates (Mbps)	433 (VHT80, SISO) 6933 (VHT160, 8x8 MIMO)	600.4 (VHT80, SISO) 9607.8 (VHT160, 8x8 MIMO)
EVM (%) for RFFE	1.8	0.7

WiFi the Main Growth Driver

- FEM growth from 18% in Q416 to 23% in Q117. Mostly from 11ac contribution. PA growth from 14% in Q416 to 17% in Q117.
- Expanding main stream products will strengthen product portfolio.
 - Gateway and Routers
 - Embedded devices
 - Smartphone
- PA/FEM for 11ax will be launched in 2H17.

Unit: NT\$ Million



Source: Qualcomm

Our WiFi 802.11ac Win by Performance

Output Power

H



Video Stream



Data Connected



Set-top box



Data Connected



IOT

L

5GHz FEM

Parameter	RichWave	Ref.
Pout @1.8% EVM, 11ac	22.5dBm	22.5dBm

2GHz FEM

Parameter	RichWave	Ref.
Pout @3% EVM, 11ac	27dBm	26dBm

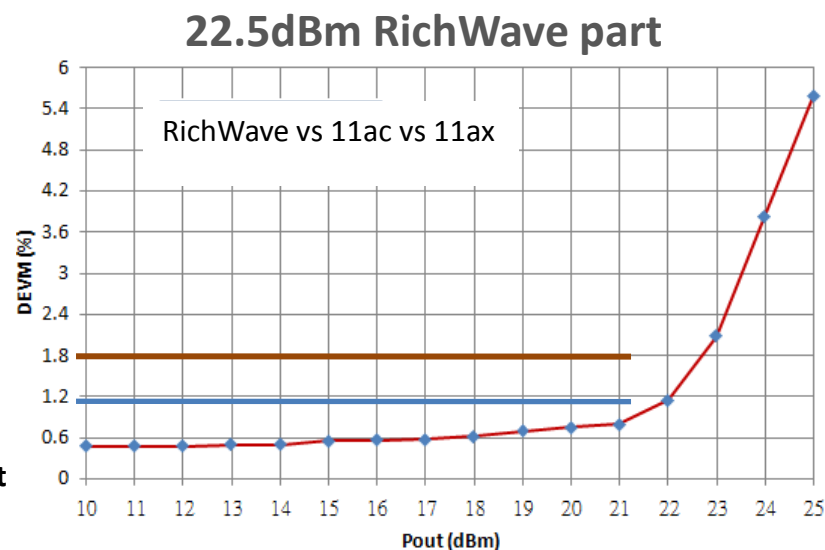
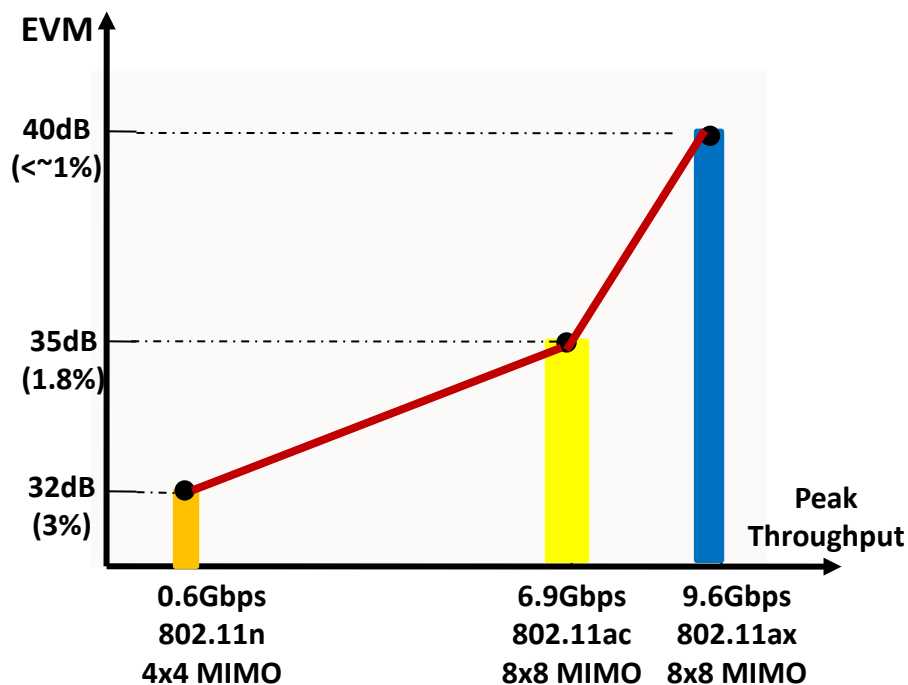
Parameter	RichWave	Ref.
Pout @1.8% EVM, 11ac	20dBm	19dBm

Parameter	RichWave	Ref.
Pout @3% EVM, 11ac	26dBm	26dBm

Parameter	RichWave	Ref.
Pout @1.8% EVM, 11ac	16dBm	16dBm

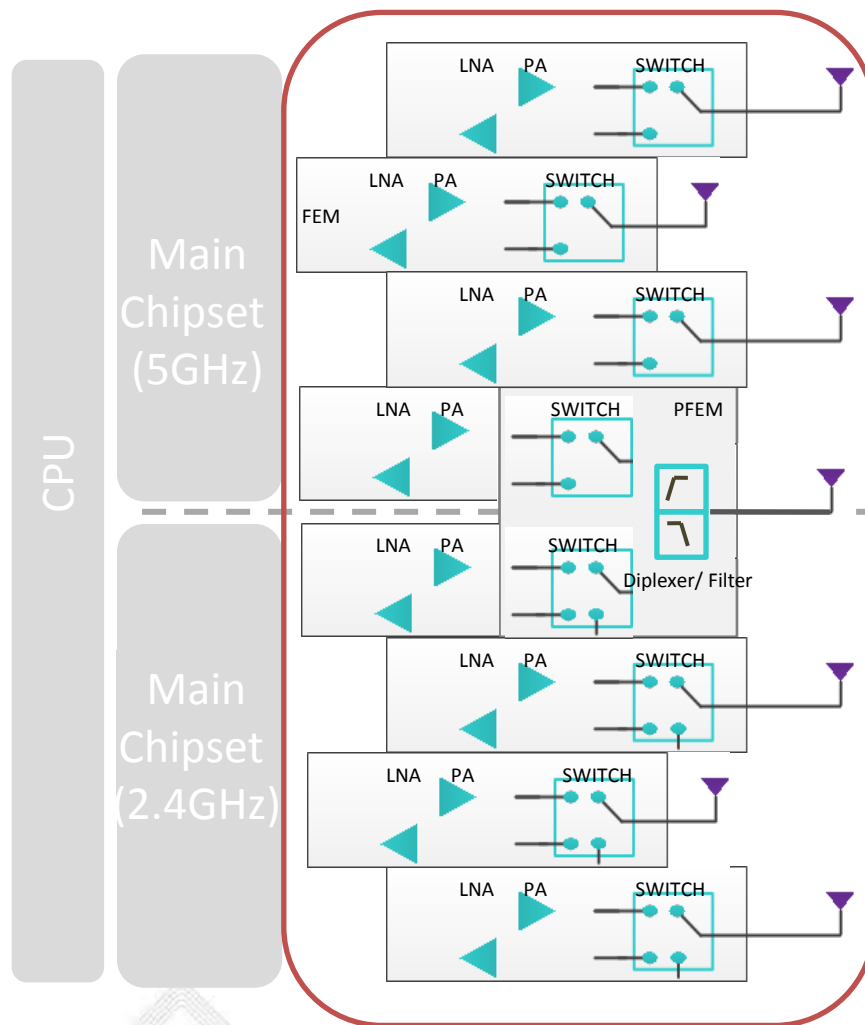
Why is RichWave FEM/PA adopted by System customers? =>Win by EVM!

- Low EVM → Longer distance reception & quality
- And 802.11ax foundation



EVM floor and EVM win

Complete WiFi Solutions



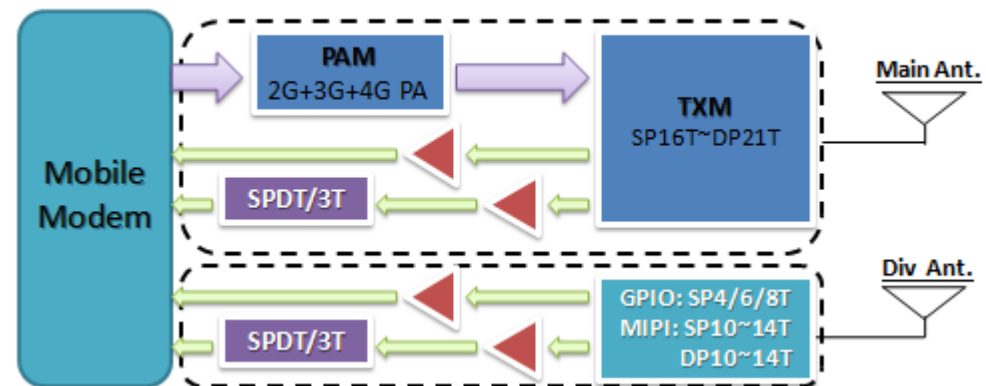
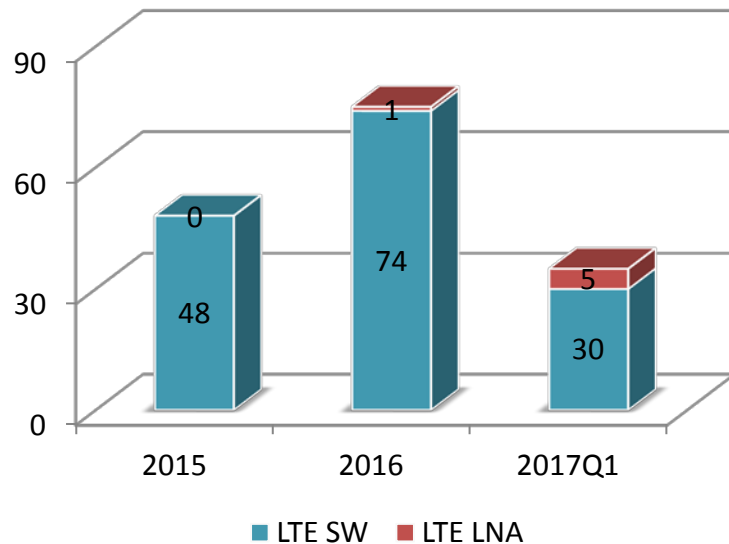
Source: D-Link

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

LTE Growth in Diversity Path

- LTE LNA ship in Taiwan and China brands
- Launch high-T switch and next-gen. small form-factor LNA.
- Smart phone requires better sensitivity, more LTE LNA need.

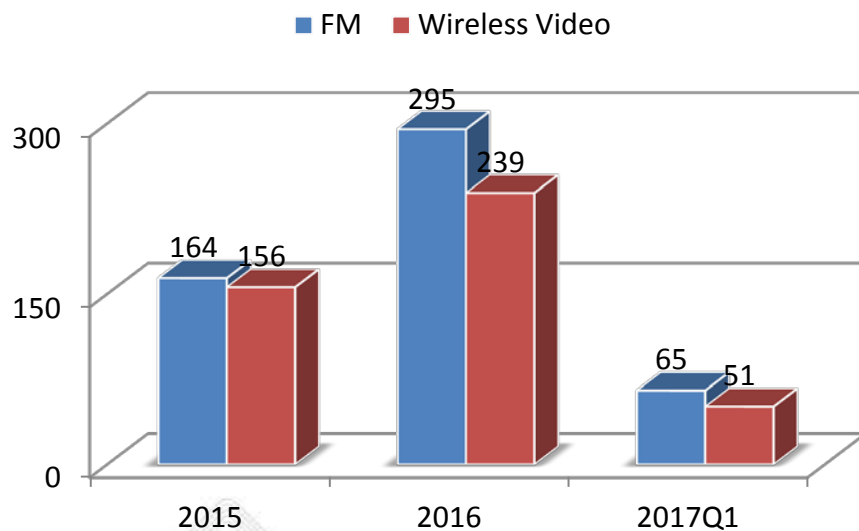
Unit: NT\$ Million



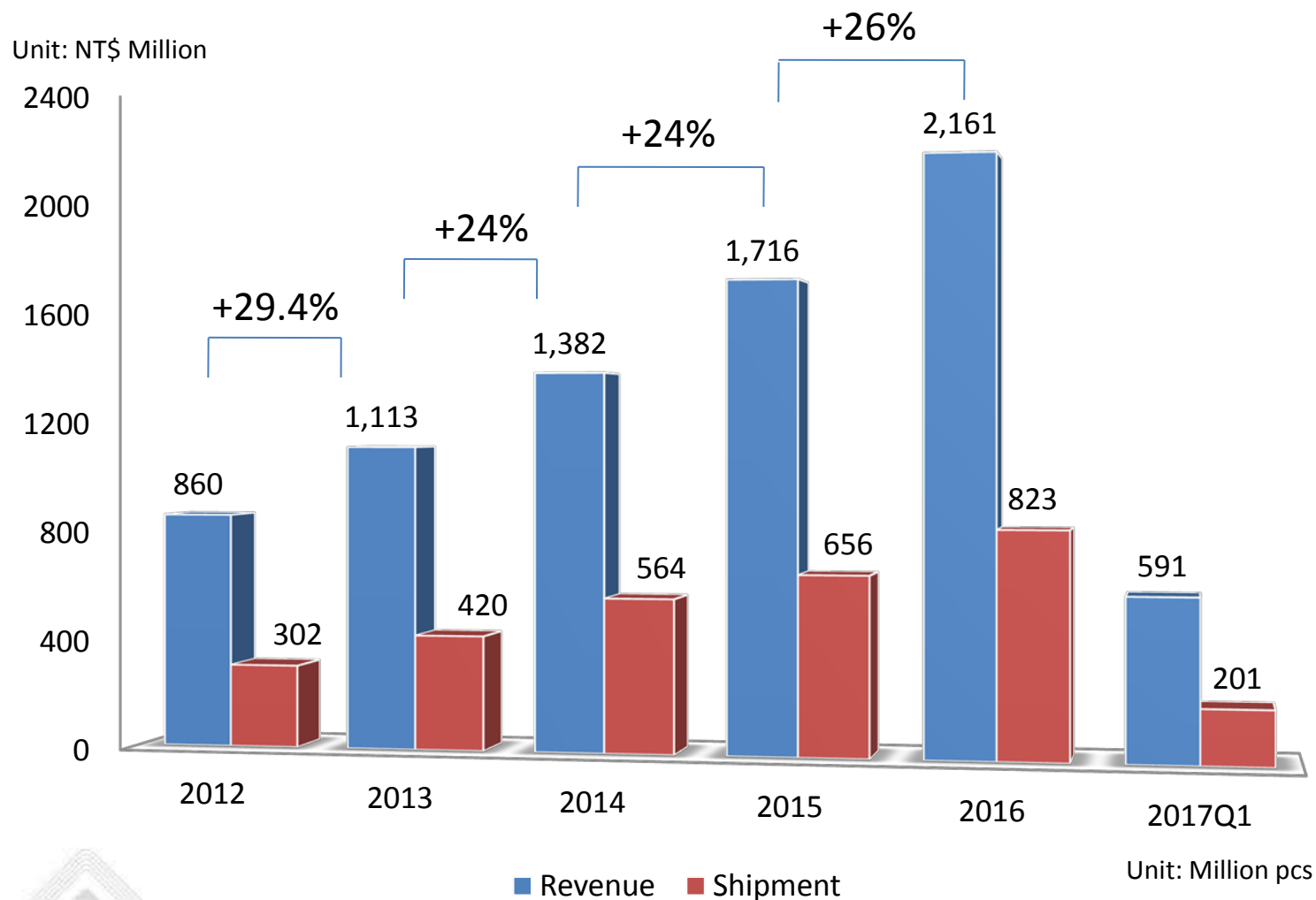
Broadcasting and Wireless Video

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

Unit: NT\$ Million



Trend in Net Sales & Units





RichWave