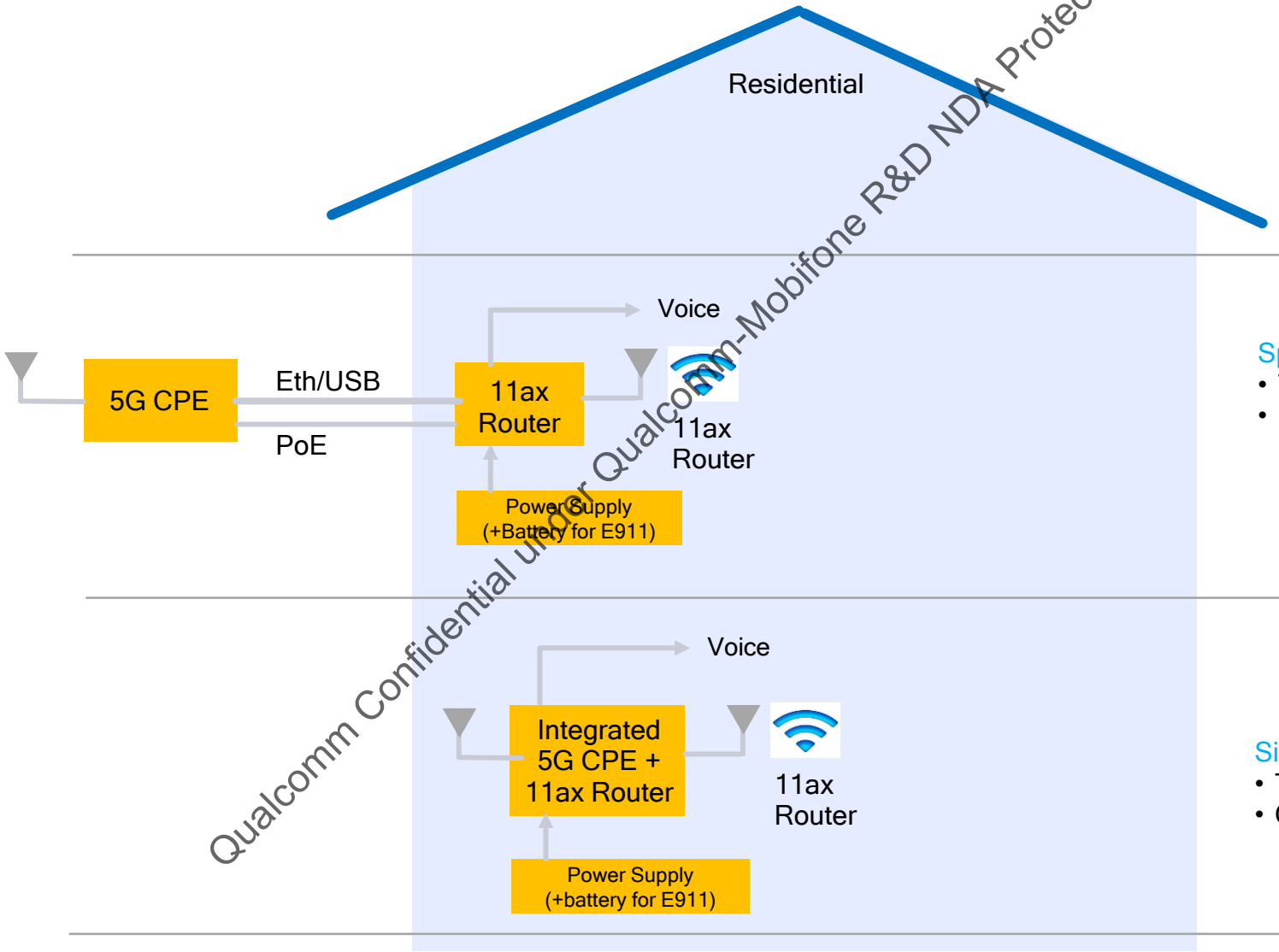
July 2020

5G MiFi/CPE Introduction

Qualcomm

Possible configurations for 5G CPE – Wi-Fi 6 Converged

Base Station

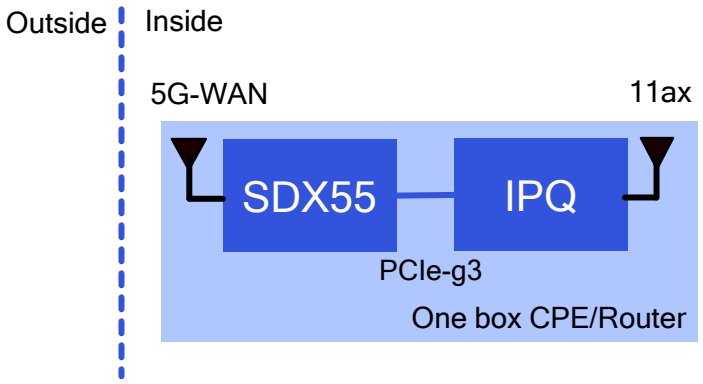


Split Mount
- Typically for mm wave deployments
- Boxes connect through Ethernet (or USB)

Single Platform
- Typically for sub 6GHz deployments
- Cost optimized

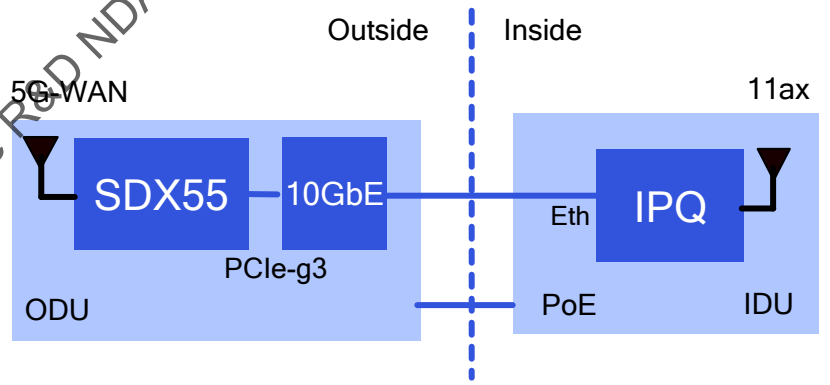
5G FWA CPE Solutions

Single Platform



- ✓5G-CPE indoor configuration
- ✓Single-box w/ integrated Home Router
- ✓Ideal for sub-6 5GHz
- ✓mmW is also an option

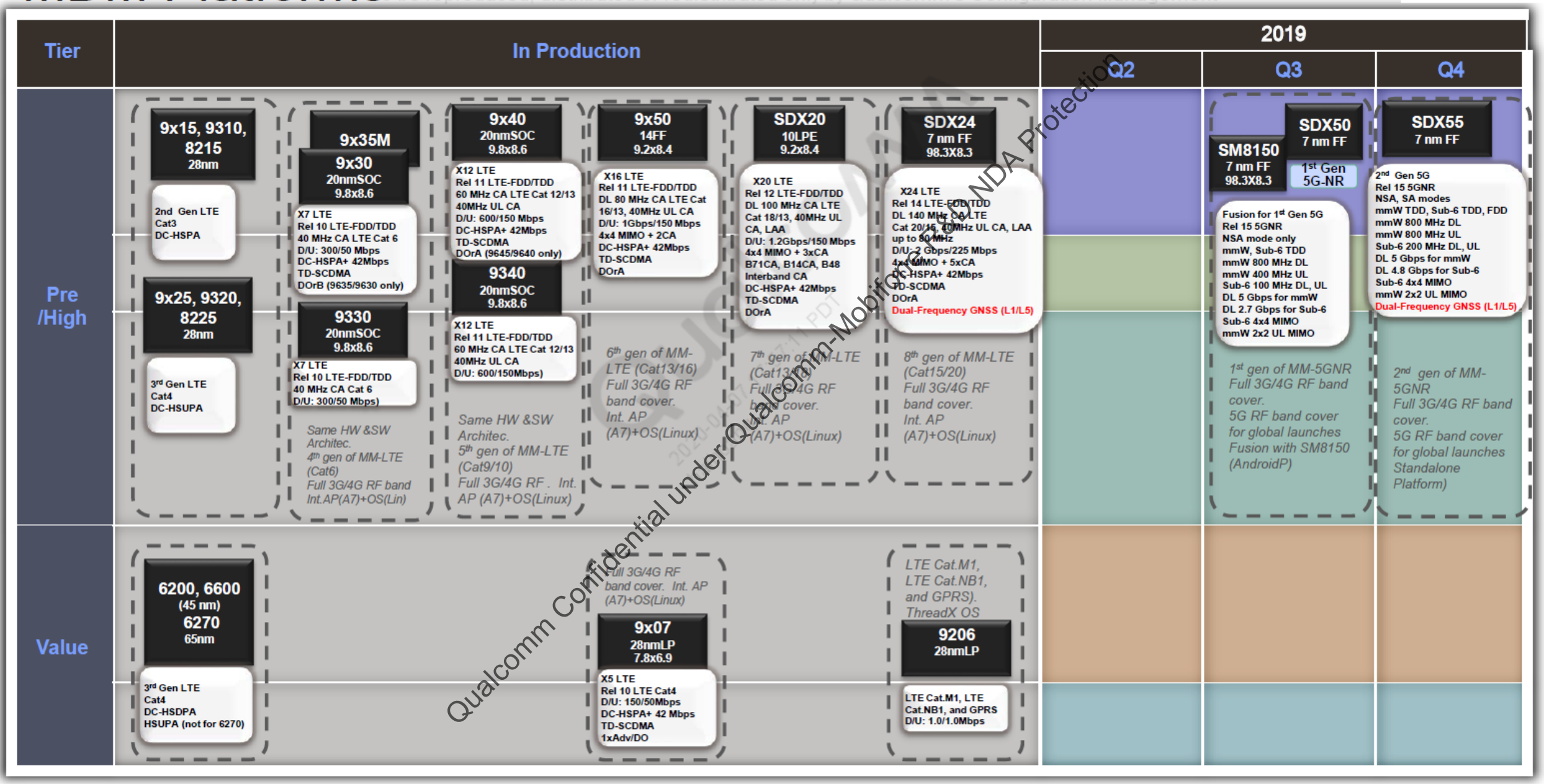
Split Mount



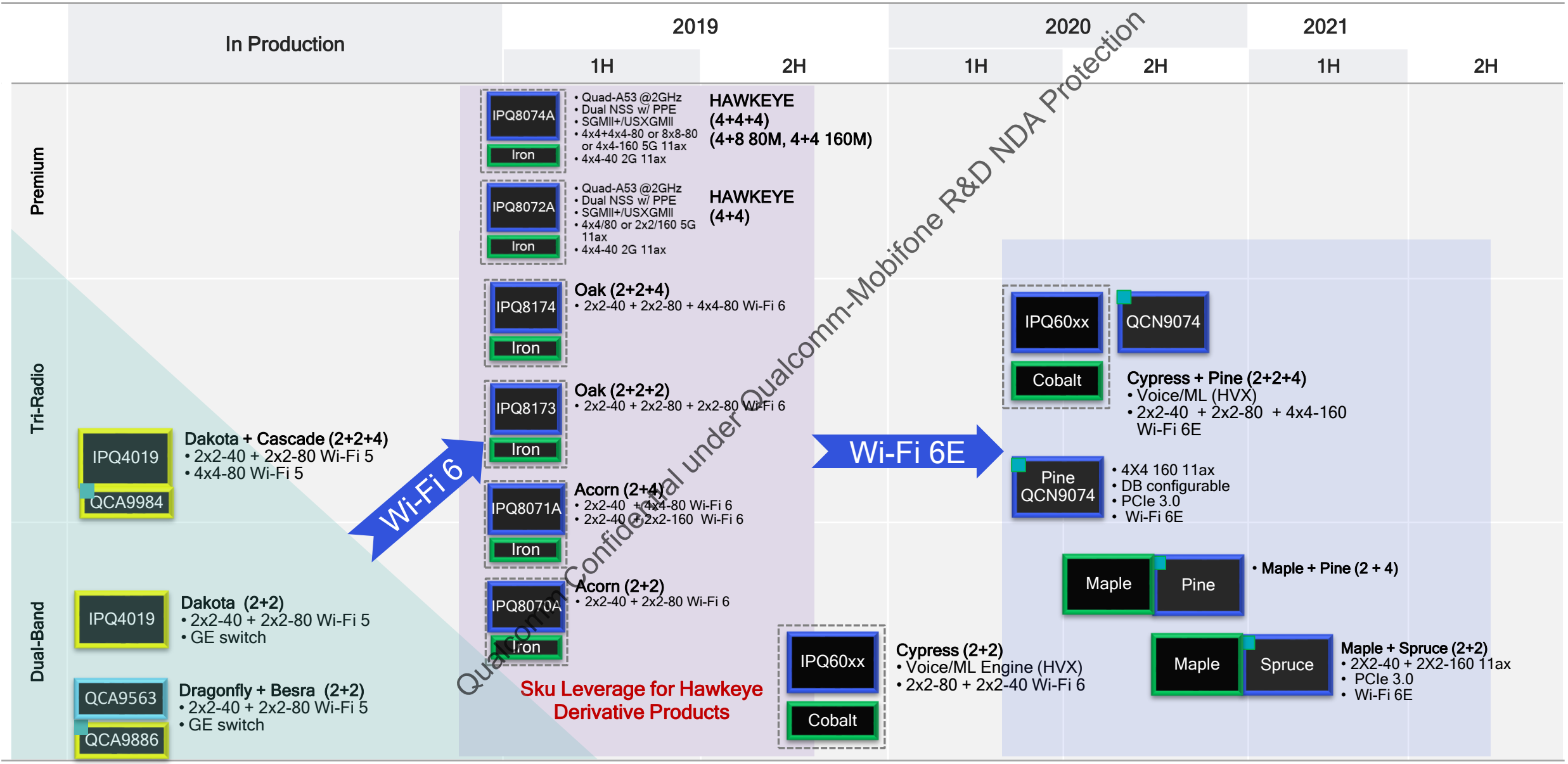
- ✓5G-CPE outdoor configuration
- ✓40+dBm EIRP
- ✓Peak NSA Throughput of 7 Gbps
- ✓Multi-gigabit Ethernet via AQC107

MDM Platforms

Qualcomm snapdragon



Qualcomm Wi-Fi 6 AP Roadmap



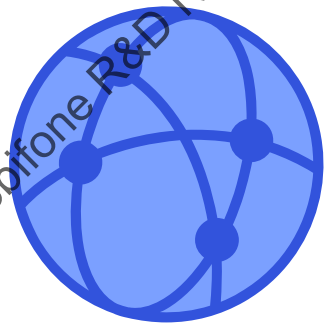
Qualcomm Technologies Wi-Fi Leadership

#1
Global Wi-Fi Market Share

Qualcomm, the #1 global share leader in Wi-Fi for Q2 2018, most recent reporting (Source: ABI Research)

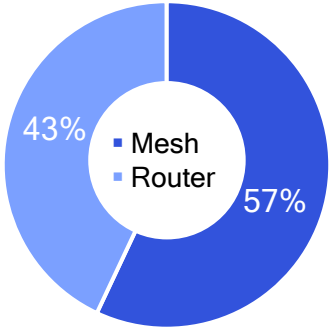
#1
Enterprise/Home/Venue Market Share

Source: Qualcomm SAM Analysis



#1
Mesh Networking Market Share

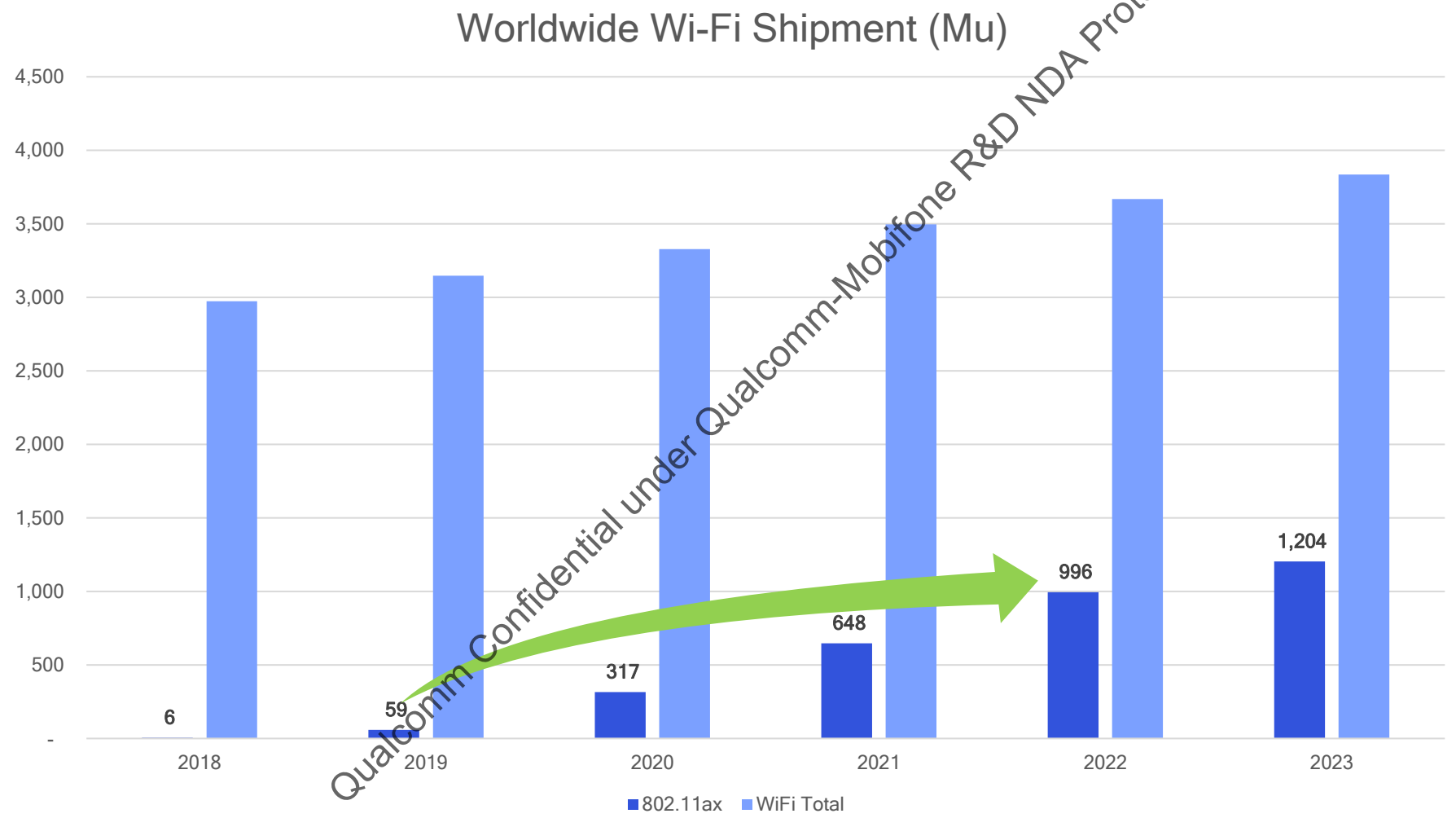
Source - Qualcomm SAM Analysis



57%
of US Retail Home Wi-Fi Market is Mesh

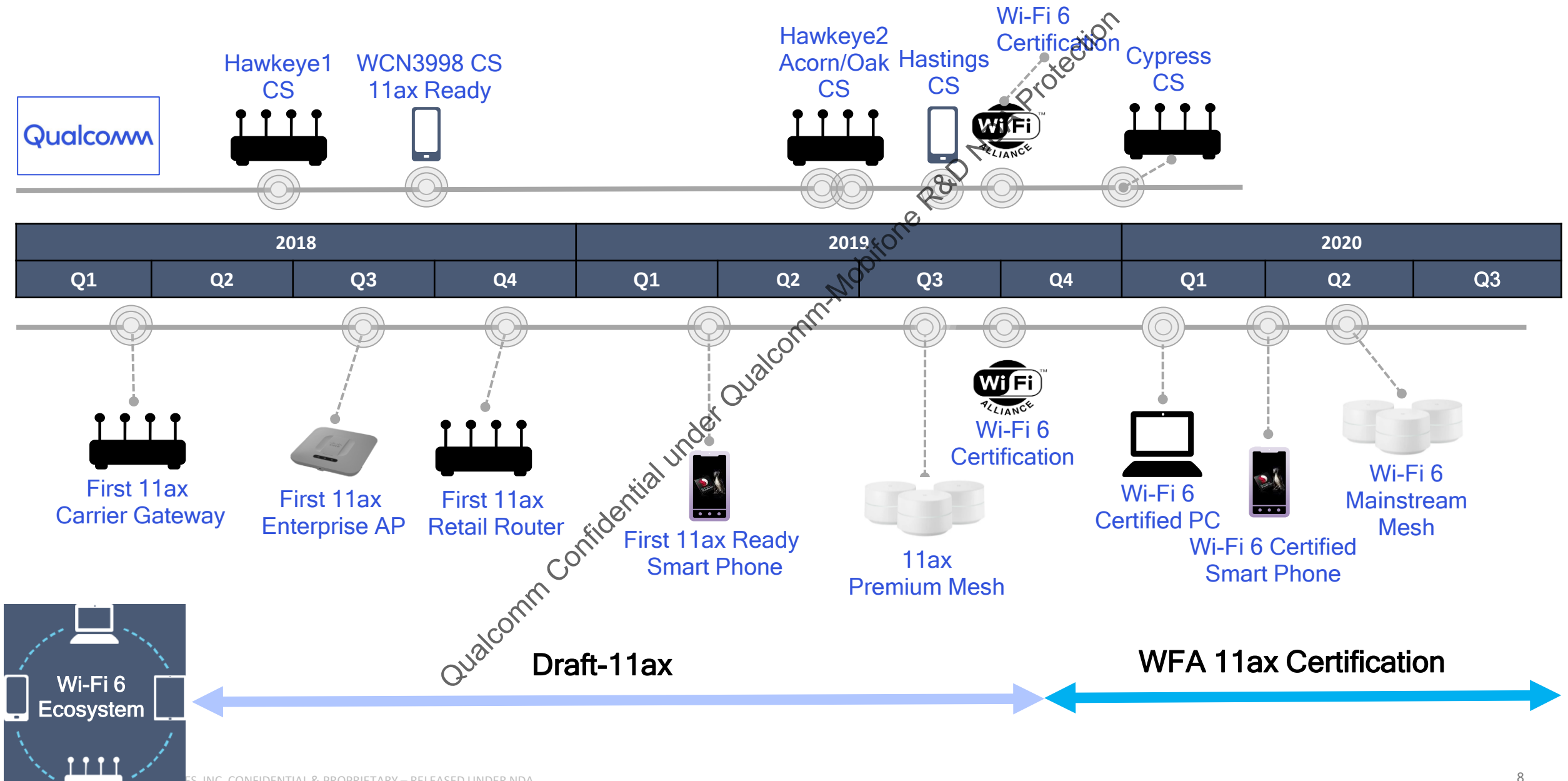
Source: The NPD Group, Inc., Retail Tracking Service, U.S, 12/18

11ax Adoption Trend

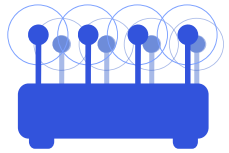


ABI Research ***Wireless Connectivity Technology Segmentation & Addressable Markets Q1'2019***

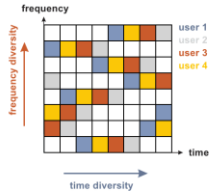
Wi-Fi 6 Ecosystem Rollout Schedule



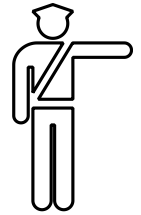
Technology building blocks of 11ax



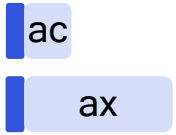
8x8
MU-MIMO
DL/UL



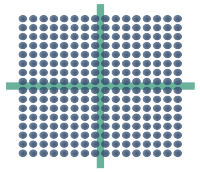
OFDMA
DL/UL



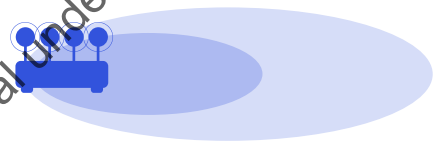
Up link resource
scheduling



Long OFDM
symbol

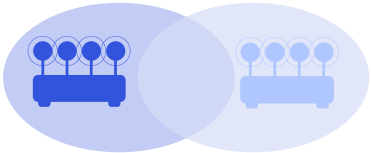


1024 QAM



Extended range

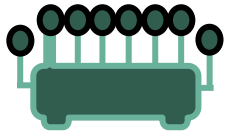
More spatial
streams



BSS color

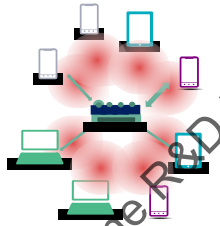
11ax provides a factor 4 higher throughput in dense environments

IEEE 802.11ax – Wi-Fi 6 Key Benefits to Carriers



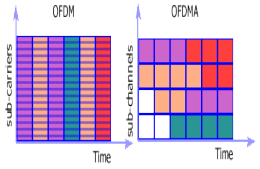
8x8 AP

- Significant capacity boost
- Greater coverage due to increased sensitivity



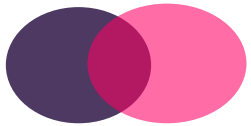
8x8 DL/UL MU-MIMO

- Better real time performance
- Significant capacity boost



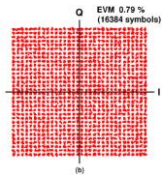
37 users DL/UL OFDMA

- Greater coverage
- Improved Wi-Fi performance, particularly in high density, high throughput environments
- More efficient IoT support



BSS Color

- Improved operation in multi-dwelling units



1024QAM

- Support of new use cases such as UHD Video and AR/VR

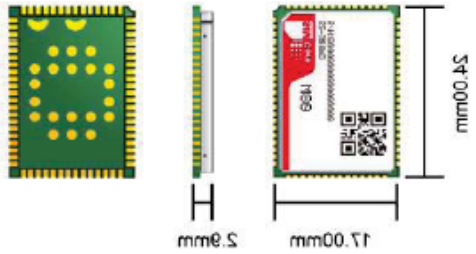
6GHz Operation

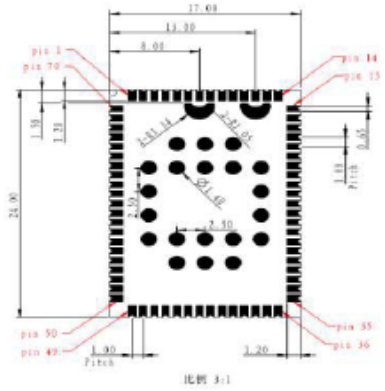
- Improved performance with new bandwidth available

5G CPE vs. 5G MiFi

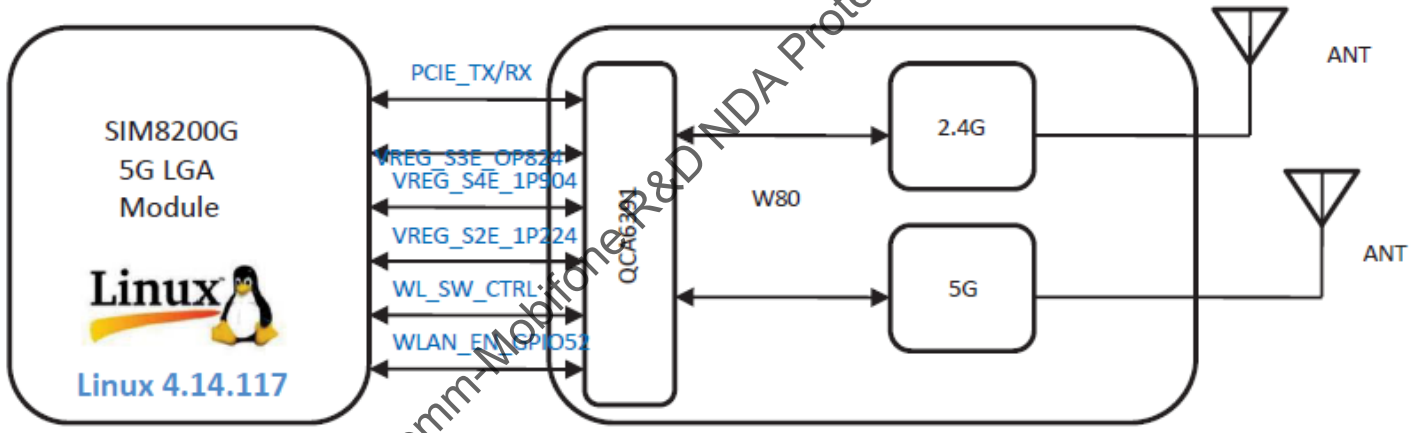
	Features	QC Wi-Fi 6 5G CPE	QC Wi-Fi 5 5G CPE	SDX55+QCA6390 (Linux)
Basic Wi-Fi AP Features	2.4G/5G 11ax, 1024 QAM, SU Beamformer	y	y	y
	WPA3 SAE, WPA2 PSK security modes, WMM & WPS2.0	Y	y	y
	DFS Master Mode	y	y	y
AP Features Carriers need	Number of clients supported	512 for each band	512 for each band	32
	Wi-Fi Mesh/Band steering/AP Steering/ATF	y	y	x
	SSIDs	16	16	3
	MU-MIMO and Multi-User Beamformer	y	y	x
	Stability in complex environment (a lot of interfetences, >10 or more STAs connected, heavy traffic with long duration)	Excellent	Excellent	Acceptable(depends on carrier's test spec)
Advanced WiFi 6 features	UL/DL-OFDMA	y	x	x
	BSS Color	y	x	x
	TWT	y	x	x
BOM Cost	Total BOM cost	Mid	Low	Lowest
	PCB stackup	4 - 6, double side	4, double side	10-12, double sided

5G MiFi Solution





W80 Wi-Fi Module



Key highlights：

- W80 Module compliant with IEEE 802.11a/b/g/n/ac/ax, 2x2 MIMO
- Use 5G module itself CPU resource to run W80 module driver as SoftAP
- Considering limitation of 5G module's CPU capacity ,it is only suitable for Portable MIFI solution or Lite version router solution
- Target Application : Portable MIFI

QCA6391

- Full featured 11ax based draft 3.0 standard

- Key benefits and KPI's
  - Support all WFA mandatory 11ax features
  - Support many key optional 11ax features
  - Target Wi-Fi 6 (11ax) certified
  - 1.775 Gbps DBS speed (2 × 2 11ax 2 GHz + 2 × 2 11ax 5 GHz)
  - Best in class Bluetooth/LE functionality and performance, 8x power reduction, 4x range

5G CPE Solution

5G

5G WAN
- Sub 6GHz for indoor deployment
- Mm Wave for outdoor deployment

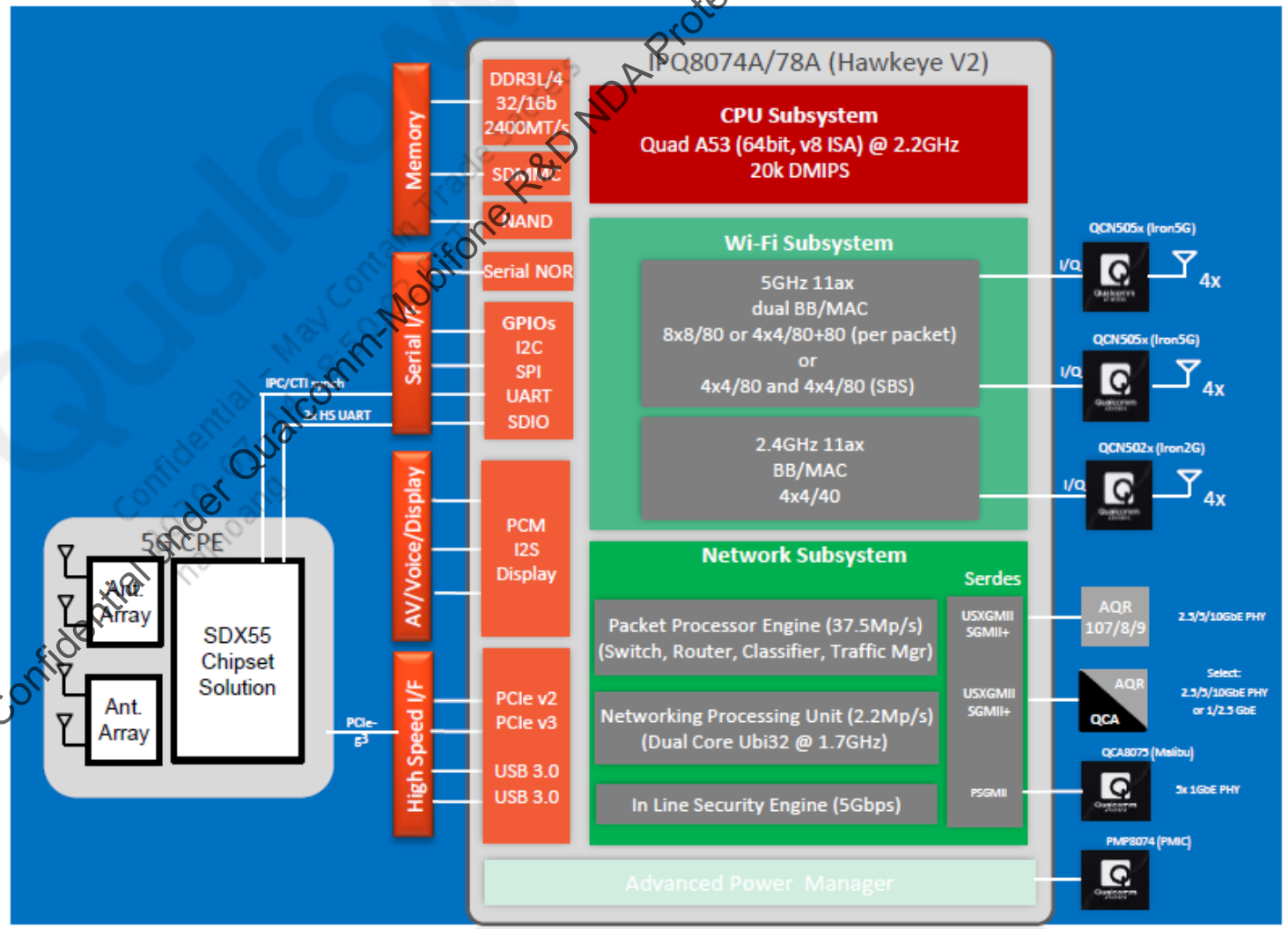
Connectivity
- 12 chains 11ax radios with flexible configuration (AX6200)
- BT / BLE / 15.4 companion chip

CPU
- Quad 64bit A53 @ 2.2GHz (20k DMIPS)

Networking
- Dual Core Multi-Threaded Network Accelerator
- Advanced classification, policing, queuing at wire speed (PPE)
- 25Gbps Acceleration

Integration
- Highest Integration in the industry
- 14FF for lowest form factor and best in class power consumption

Platform Differentiation
- Best in Class 5G Modem integrated with best in class 11ax Wi-Fi 6 router
- System performance optimization
- Free CPU cycles for OEM-specific apps thanks to full offload Wi-Fi driver



Qualcomm

Thank you

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