Qualcomm

中国技术与合作峰会

Qualcomm Technology Day

携手新时代 共赢创未来

Innovating and collaborating for what's next

Qualcomm中国技术与合作峰会

Qualcomm Technology Day
Welcome

Frank Meng
Chairman
Qualcomm International, Inc.
China
The opportunity ahead

Steve Mollenkopf
CEO
Qualcomm Incorporated
Years of driving the evolution of wireless

30+

Fabless semiconductor company

#1

Source: Qualcomm Incorporated data. IHS, Nov. ’17
Cumulative smartphone unit shipments forecast between 2017-2021

Source: Gartner, Sep. '17
Mobile technology is powering the global economy
The mobile roadmap is leading the way

Qualcomm is the R&D engine
A strategy for continued growth
Extending the reach of mobile technology

Core mobile—$32B
Datacenter—$19B

~$150B
Serviceable addressable opportunity in 2020

$20B – RF-Front End
$77B – Adjacent industries

Automotive $16B
IoT and security $43B
Mobile compute $7B
Networking $11B

Source: combination of third party and internal estimates. Includes SAM for pending NXP acquisition. Note: SAM excludes QTL.
Executing on our strategy

>$3 Billion in FY17 QCT revenues

Up >75% over FY15

FY17 revenue across auto, IoT, security, networking and mobile compute
A proven business model that has enabled value creation between China and US
Our commitment to China
Supporting growth across many industries

Joint innovation centers in Nanjing, Chongqing, Qingdao
SMIC
Zixue Zhou
Chairman of the Board
Joining hands to lead the world to 5G

Cristiano Amon
President
Qualcomm Incorporated
More than a new generation of mobile. A new kind of network.

- Unifying connectivity fabric
- Scalable across many dimensions
- Redefining a wide range of industries
The smartphone has transformed expectations

Source: Gartner, Sept. '17, United Nations DESA 2017
5G provides a significant opportunity for China
New capabilities create new opportunities for global disruption

- Fiber-like speeds
- Uniform experience
- Low cost-per-bit
- Low latency

- Mobilizing media and entertainment
- Immersive experiences
- Connected vehicle
- High-speed mobility

- Pervasive cloud connectivity
- More lifelike social experiences
- Augmented reality
- Dense environments

5G
Facilitating Artificial Intelligence virtually everywhere

Enhancing cloud AI

Advancing on-device AI

Qualcomm Snapdragon is a product of Qualcomm Technologies, Inc. and/or its subsidiaries.
The 5G Economy

$12 Trillion
5G-related goods and services in 2035

$3.5T Revenue
Globally in 2035

22M Jobs
Globally

Source: “The 5G Economy, How 5G technology will contribute to the global economy,” IHS Economics & IHS Technology, January 2017; commissioned by Qualcomm Technologies, Inc.
Awarded with

World Leading Internet Scientific and Technological Achievements
At the 4th World Internet Conference

Qualcomm leading 5G technologies won the award for two consecutive years
Qualcomm 5G NR sub-6GHz prototype and trial platform listed in 2016
Making 5G a reality in 2019

The industry is ready, consumers are waiting

Fiber-like speeds
Low latency for real-time interactivity
Much more capacity for unlimited data plans

World's first announced 5G NR multimode modems

Qualcomm Snapdragon X50
5G Modem Family

5G NR smartphone reference design

>86%
Need or would like faster connectivity on next smartphone

~50%
Likely to purchase a phone that supports 5G when available

Source: Qualcomm Technologies consumer research
World firsts: Standards-compliant 5G NR interoperable systems

End-to-End 5G NR Interoperable System
November 2017

Multi-Band 5G NR Interoperability
December 2017

China Mobile

ZTE

Qualcomm

at&t

docomo

orange

vodafone

SK
telecom

Sprint

t

verizon

ERICSSON

Qualcomm

T

LTE advancements are essential to 5G

- Drone communications
- Existing LTE deployments
- Automotive (C-V2X)
- LTE IoT
- Public safety / Emergency services
- 5G NR mmWave
  nx10 Gigabit 5G
- 5G NR Sub-6 GHz and LTE coverage
  nx1 Gigabit 5G
- Ubiquitous LTE
  Gigabit LTE, VoLTE, ULL
- Private IoT networks
- Existing LTE deployments
Gigabit LTE is a global phenomenon

- 43 operators
- 1.3 Billion LTE connections served
- 25 countries
- 17 devices

Source: Qualcomm Technologies internal analysis, GSA “Snapshot: LTE-Advanced Networks including LTE-Advanced Pro” report, May 2017, GSMA Intelligence, Nov. ‘17
The China mobile ecosystem is poised for growth.
China OEMs showing strong growth, Qualcomm well positioned to jointly win
Uniquely qualified to partner in China

Technology leadership

Proven business model

Value creating collaborations
圆桌讨论  Panel Discussion
Qualcomm® RF Front End will assist Chinese OEMs meet global demand for faster speeds and more data.
RFFE impacts nearly every user experience

Signal performance in real-use conditions

Bezel-less displays

Sleek industrial design

Global LTE

Long battery life
RF success requires a broad set of capabilities

- Comprehensive set of technologies
- Advanced module integration
- Modem intelligence for system-level innovation
- Modem-to-antenna solution

RFFE is becoming a modem-to-antenna solution
# Uniquely positioned to lead in RFFE

<table>
<thead>
<tr>
<th>Capabilities critical for 5G RF success</th>
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Qualcomm Technologies unique modem-to-antenna solution

- Antennas
- RF transceiver
- Modem
Complexity of mobile RF systems is accelerating
5G impacts RF-Front End design

5G

- Many more spectrum bands/types
- Advanced wireless technologies
- A much wider variation of use cases
- More diverse deployment scenarios

Number of RF bands and band combinations
By technology generation

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<td>4G carrier aggregation combinations</td>
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Tunable 5G RF-Front End

Multimode 3G/4G/5G poses immense challenge

Qualcomm Technologies end-to-end system uniquely positions us to lead in 5G multimode RFFE

Reconfigures for coarse band selection and hand effects

Dynamically tunes RFFE performance using modem intelligence and network information
Committed to creating products of innovative technology and aesthetics

Bring ultimate technology experience to young people around the world

Focus on technology

Deliver world-leading wireless solutions

Strategic Partner
Qualcomm Spectra™ ISP

OPPO and Qualcomm’s customized optimization on ISP

OPPO R11
In Production

- Smart antenna solution (Tuner)
- Envelope tracking module (ET)

Tested and Validated

- Qualcomm’s power amplifier (PA)
- Integrated RF modules designed for global SKU (PAMiD)
OPPO expanding RF cooperation with Qualcomm
Qualcomm  vivo

Strategic Partnership
Qualcomm RFFE behind full range of vivo star products

Enabled the superior consumer experience
Continue to expand the RF products cooperation
Deepened cooperation for next generation products (Xplay, X & Y series)

In Production

• Envelope Tracker
• Average Power Tracker
• Low Noise Amplifier (QLN)
• SAW Filter

In Planning

• Antenna Tuners
• DRx Module
• Power Amplifier Modules
• Power Amplifier + Filter Modules
Qualcomm RFFE share to grow continuously

- Mature technology
- Superior performance
- Reasonable layout
To help vivo gain advantages in 5G era

Qualcomm Sub-6GHz Tunable 5G RF-Front End
Xiaomi

KS Yan
MiPhone Vice President,
Vice Chairman of MiPhone Quality Committee
Announcing RF-Front End commitments

Strong traction for rich portfolio of unique modem-to-antenna solutions

$2B between 2019-2021

Source: Qualcomm Technologies
Press Release of Jan 25, 2018
Making 5G NR a commercial reality in China in 2019
Join hands to pioneer a new 5G era

Mr. Zhengmao Li
Executive Vice President
China Mobile Communications Corporation
Joining hands to lead the world to 5G
5G Pioneer Initiative

Go Premium

Go Beyond

Go Global
Thank you!

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