

The Qualcomm logo is displayed in white, sans-serif font against a blue sky background with light clouds. The background of the entire image is a panoramic view of a modern city skyline with various skyscrapers and buildings under a clear blue sky.

Qualcomm

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

January 25, 2018

#Qualcomm中国技术与合作峰会#

Beijing, China

Qualcomm

Welcome

Frank Meng

Chairman

Qualcomm International, Inc.

China

January 25, 2018

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The opportunity ahead

Steve Mollenkopf

CEO

Qualcomm Incorporated



30+

Years of driving the evolution of wireless

#1

Fabless semiconductor company



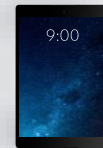
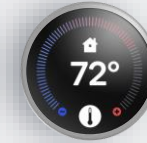
Qualcomm

~8.6 Billion

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

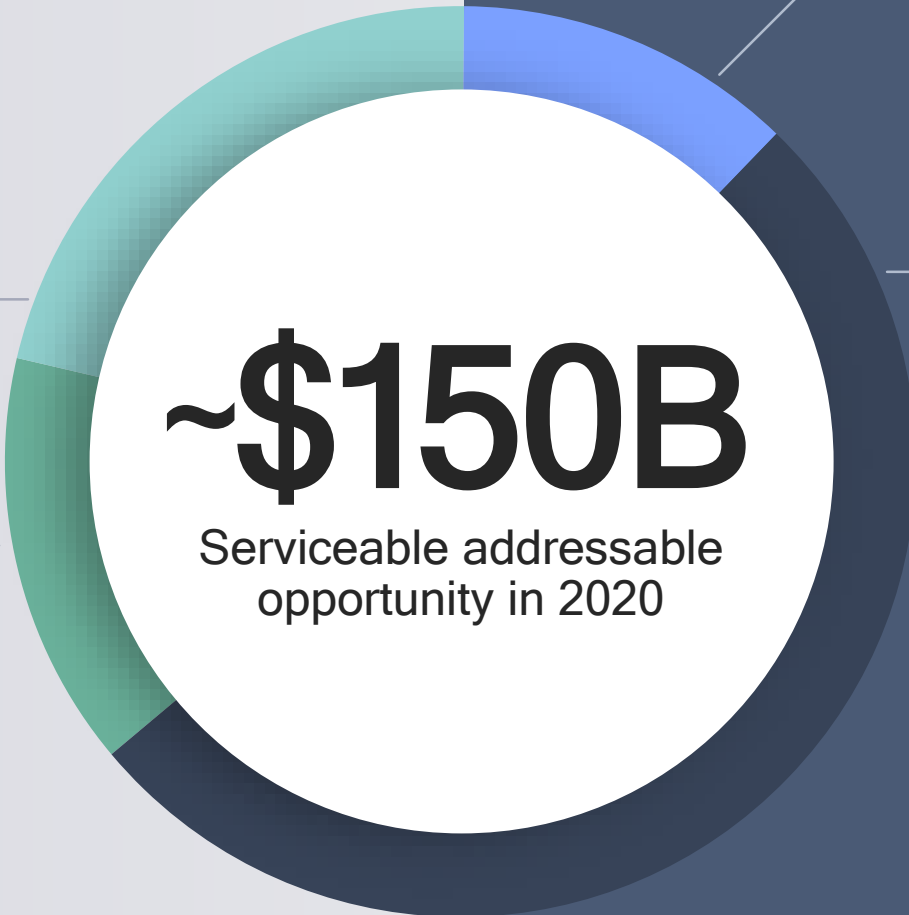
Qualcomm is the R&D engine

A strategy for continued growth

Extending the reach of mobile technology

Core mobile – \$32B

Datacenter – \$19B



\$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

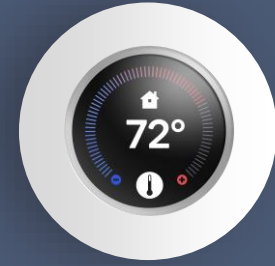
> \$3 Billion

in FY17 QCT revenues

Up >75% over FY15



Automotive



IoT and security



Mobile compute

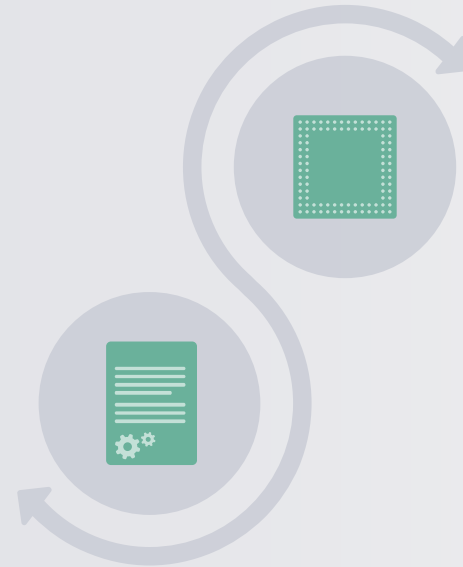


Networking

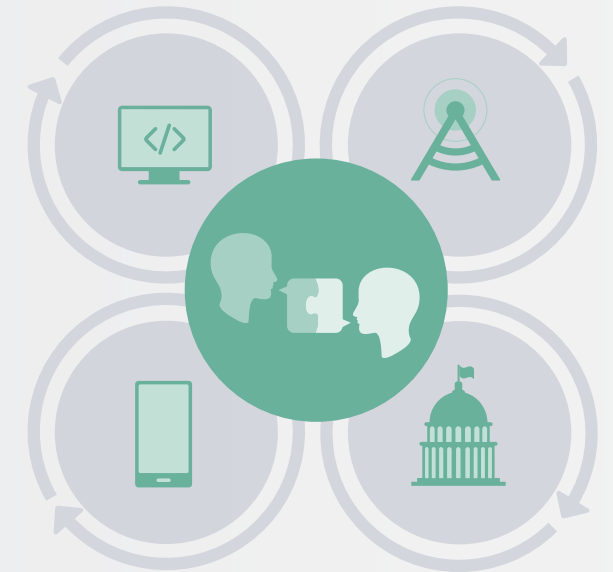
A proven business model that has enabled value creation between China and US



Invent



Share



Collaborate

Our commitment to China

Supporting growth across many industries



China Mobile
China Telecom
China Unicom

Huaqin
Longcheer
WingTech



Mobile

Coolpad | Gionee
Haier | Hisense
Huawei | Lenovo
Meizu | Meitu | nubia
OnePlus | OPPO
Qiku | Smartisan | TCL
vivo | Xiaomi | ZTE



Semiconductors

SMIC | SJ Semiconductor Corp.



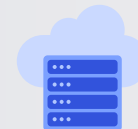
IoT

Alibaba | Mobike |
Little Genius | Thundersoft
Midea | Goertek



Software

Tencent | Netease



Server

Guizhou Province



Automotive

Geely | BYD | ZongMu



Mobile Computing

Lenovo



AI

Baidu | Sensetime
Tencent | Face++



XR

Xiaomi | Pico | iQiyi

Joint innovation centers in Nanjing, Chongqing, Qingdao

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SMIC

Zixue Zhou

Chairman of the Board

January 25, 2018

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Beijing, China

Qualcomm

Lenovo

Yuanqing Yang

Chairman and CEO

January 25, 2018

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Joining hands to lead the world to 5G

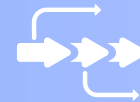
Cristiano Amon

President

Qualcomm Incorporated

5G

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

5G provides a significant opportunity for China

New capabilities create new opportunities for global disruption



5G

- 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

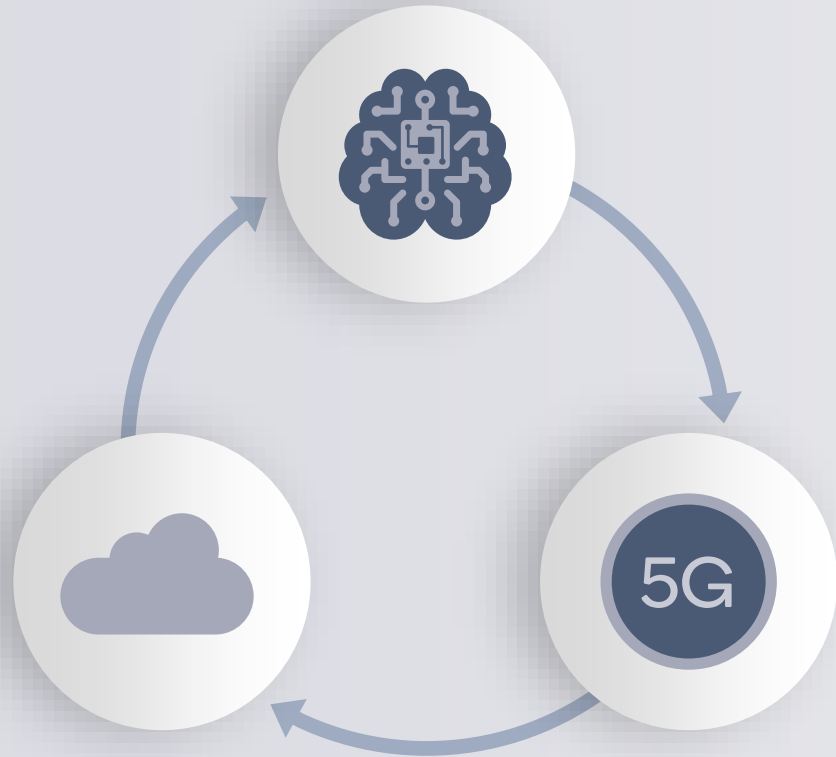


Augmented reality



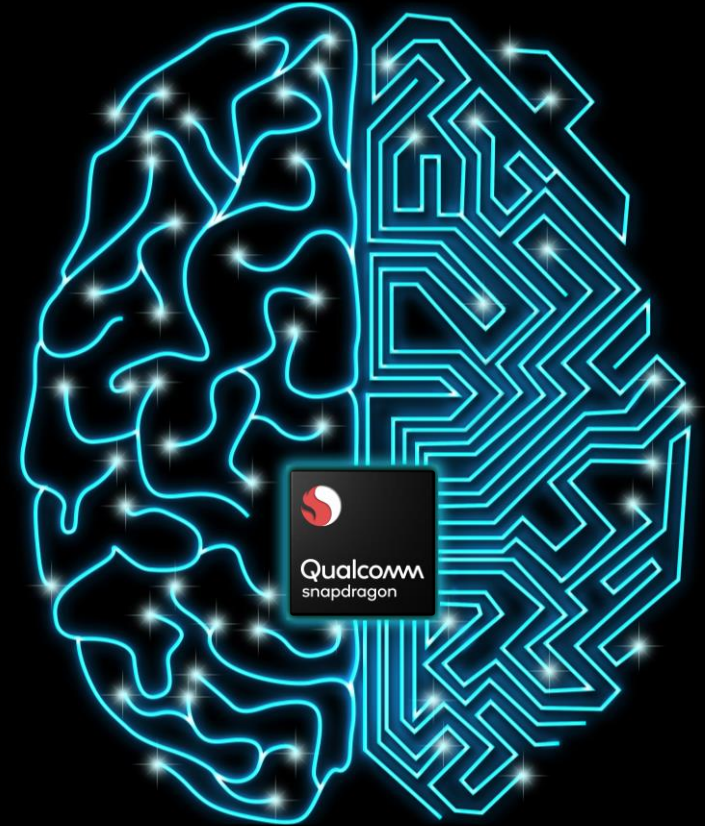
Dense environments

Facilitating Artificial Intelligence virtually everywhere



Enhancing cloud AI

Qualcomm® Snapdragon™
Artificial Intelligence Engine



Advancing on-device AI

The 5G Economy

\$12 Trillion

5G-related goods
and services in 2035



5G value chain

\$3.5T Revenue

Globally in 2035

22M Jobs

Globally

Qualcomm

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

Qualcomm snapdragon X50 5G Modem Family

World's first announced
5G NR multimode
modems



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

World firsts: Standards-compliant 5G NR interoperable systems

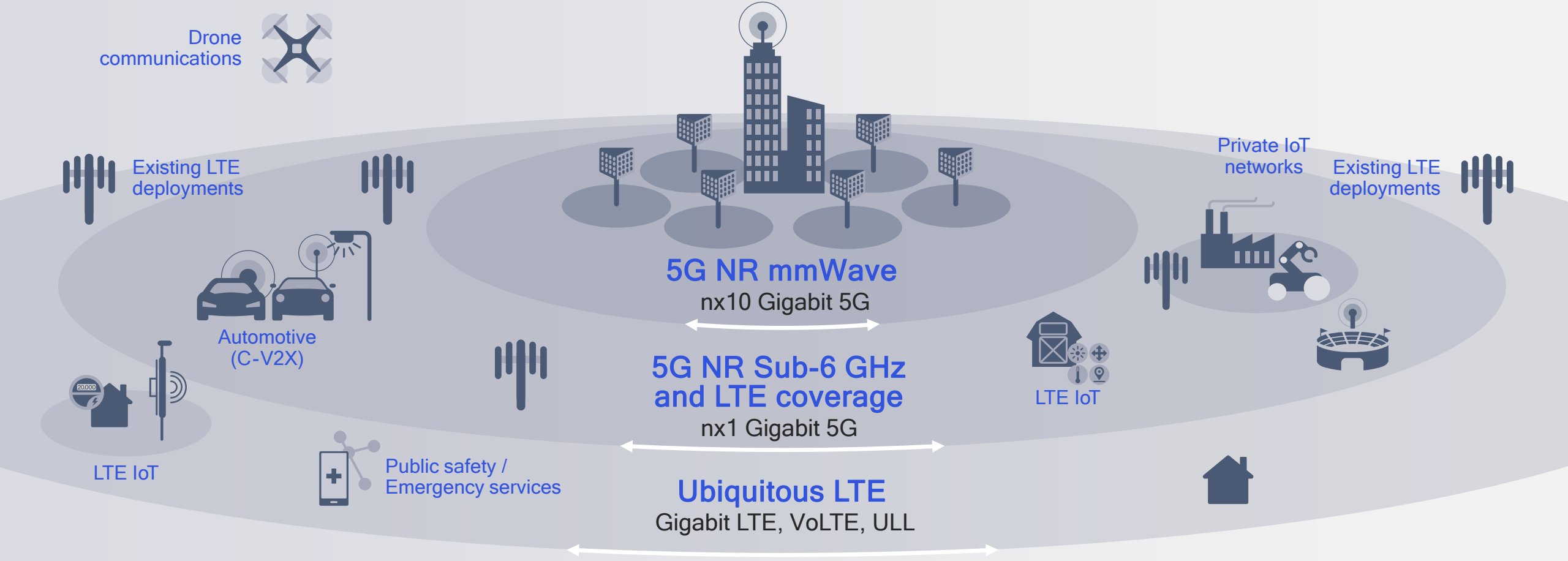
End-to-End 5G NR Interoperable System
November 2017



Multi-Band 5G NR Interoperability
December 2017



LTE advancements are essential to 5G



Gigabit LTE is a global phenomenon



43 operators



1.3 Billion
LTE connections served



25 countries

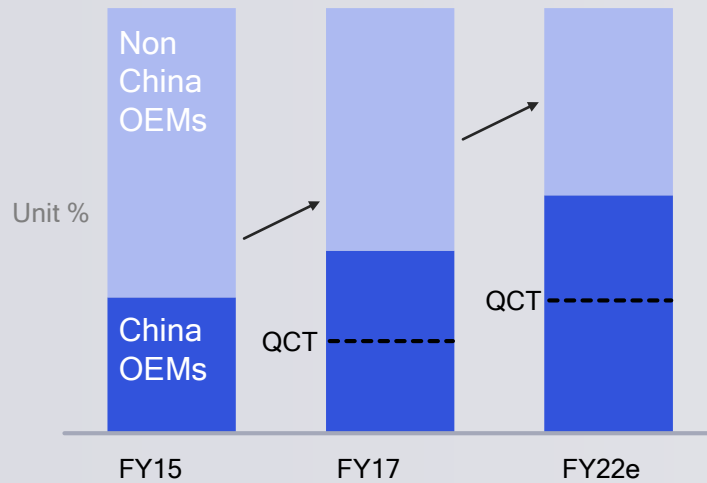


17 devices

The China mobile ecosystem is poised for growth

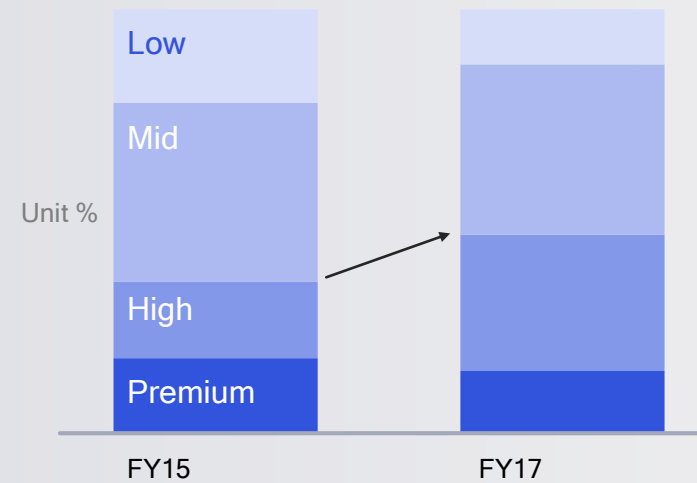


3G/4G/5G global OEM shipments



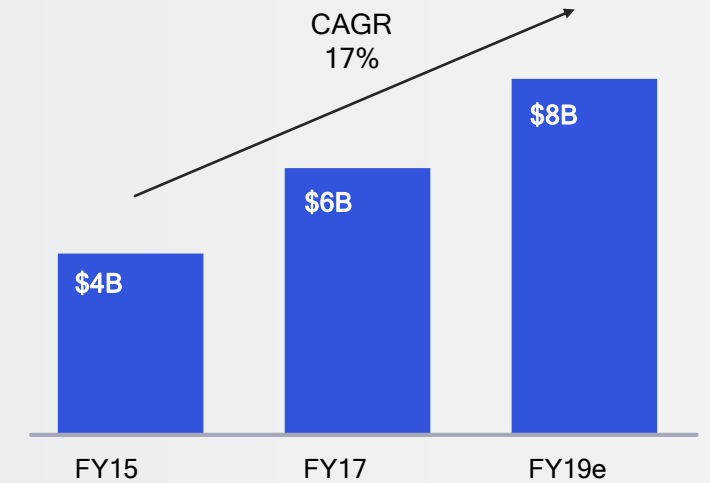
- Chinese OEMs rapidly growing share
- OEMs moving outside of China

China domestic handset price tiers



- Domestic China market moving up tier

Qualcomm China OEM product revenues



- Technology leadership in LTE/5G
- Robust portfolio across all tiers
- Ability to enable global devices

China OEM product revenues: customers headquartered in China.

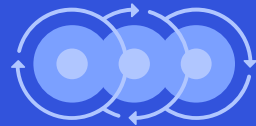
China OEMs showing strong growth, Qualcomm well positioned to jointly win

Uniquely qualified to partner in China

Technology
leadership



Proven
business model



Value creating
collaborations



Qualcomm





霍锦洁
Kitty Fok

IDC中国区总裁
Managing Director, IDC
China

ZTE 中兴

程立新
Lixin Cheng

中兴通讯终端事业部
总经理
CEO of ZTE Mobile
Devices



林斌
Bin Lin

小米公司
联合创始人、总裁
Co-Founder & President
Xiaomi

vivo

沈炜
Wei Shen

vivo首席执行官
vivo CEO

oppo

陈明永
Tony Chen

OPPO首席执行官
OPPO CEO

Lenovo

Aymar de
Lencquesaing

联想集团执行副总裁、
摩托罗拉移动管理委员会
主席兼总裁
EVP Lenovo, Chairman
and President Motorola

WINGTEC
PROFESSIONAL SOLUTIONS

张学政
Xuezheng Zhang

闻泰科技董事长
Chairman of Wingtech
Technology

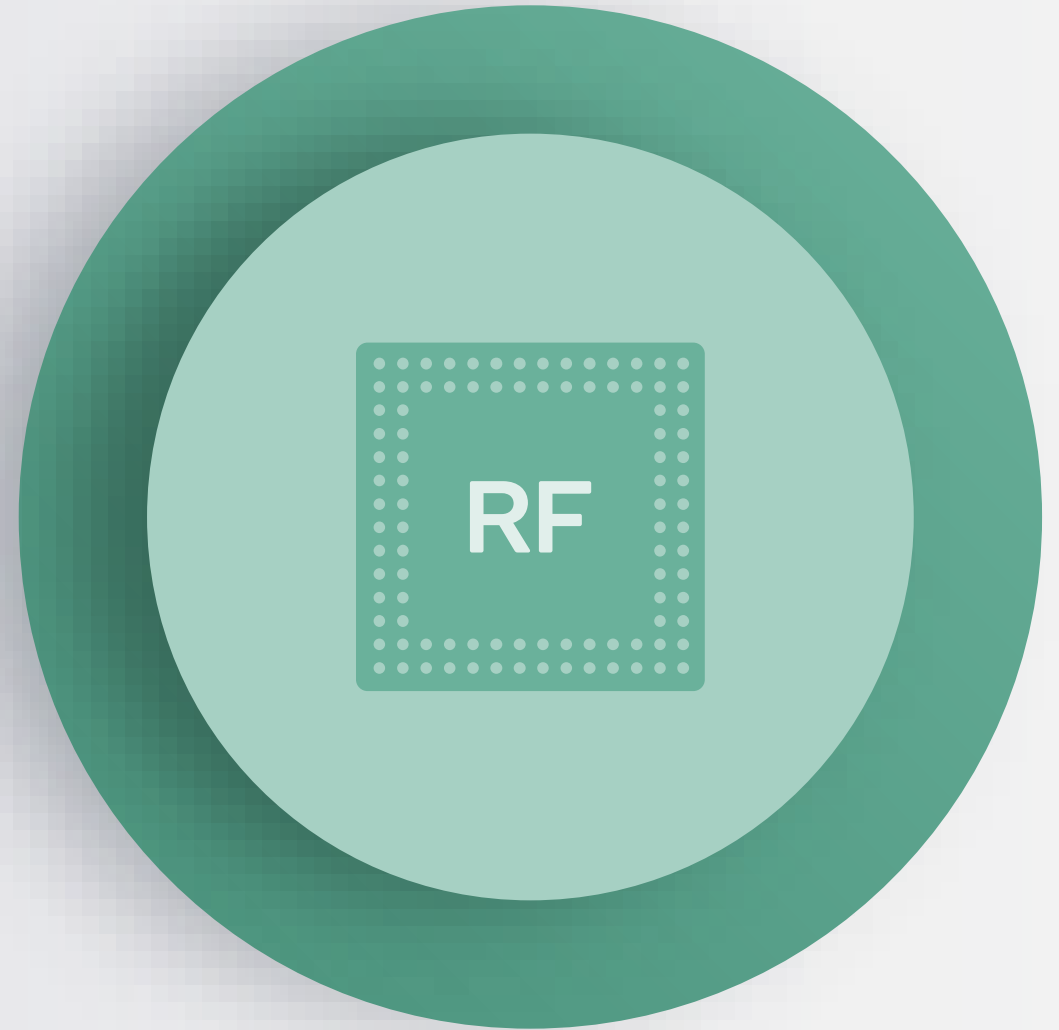
Qualcomm

Alex Katouzian

Qualcomm Technologies
高级副总裁兼移动业务总经理
SVP and GM, Mobile,
Qualcomm Technologies

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



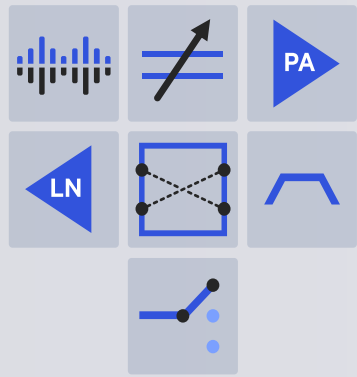
Global LTE



Long battery life



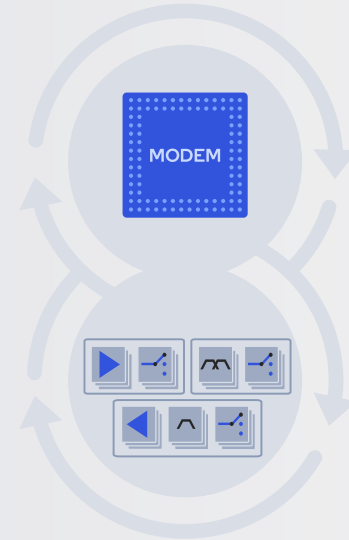
RF success requires a broad set of capabilities



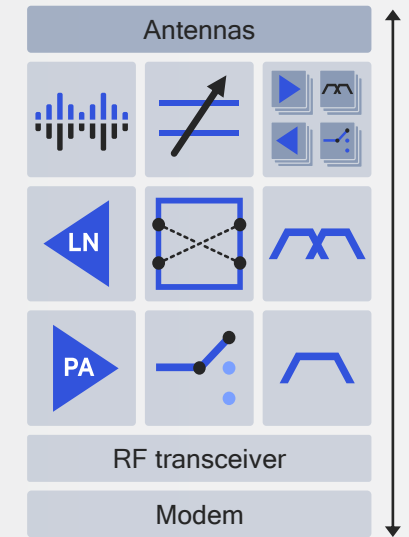
Comprehensive set of technologies



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

Capabilities critical for 5G RF success

Qualcomm

A

B

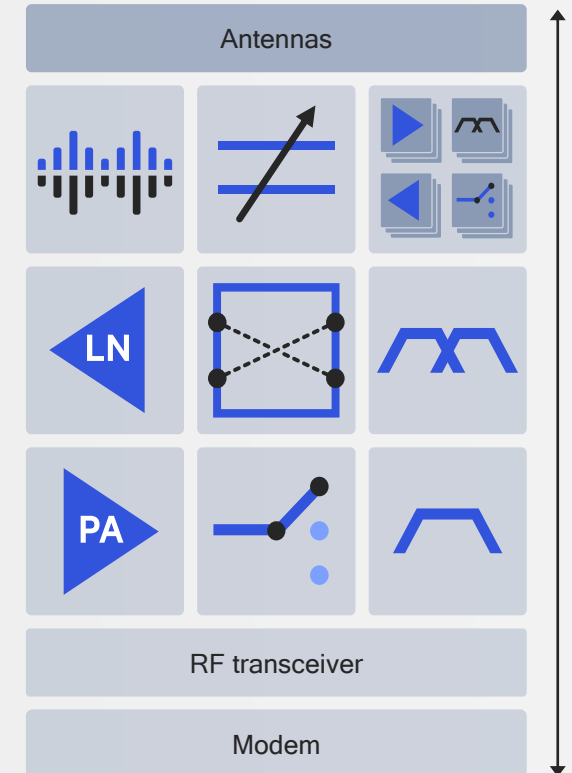
Others

C

D

Capabilities critical for 5G RF success	Qualcomm	A	B	Others	C	D
Modem-to-antenna portfolio	✓	✗	✗		✗	✗
Power amps – MMPA	✓	✓	✓		✗	✗
Power amps – PAMiDs	✓	✓	✓		✓	✓
LNA/Filter modules	✓	✗	✓		✓	✓
Power tracker	✓	✗	✓		✓	✓
Antenna tuner	✓	✗	✓		✓	✗
Filters – BAW/FBAR	✓	✓	✓		✗	✗
Filters – SAW	✓	✗	✓		✓	✓
Filters – TC-SAW	✓	✗	✓		✓	✓
RF transceiver	✓	✗	✗		✗	✗
Modem	✓	✗	✗		✗	✗
Modem intelligence and SW	✓	✗	✗		✗	✗
Full system-level solution	✓	✗	✗		✗	✗

Qualcomm Technologies unique modem-to-antenna solution



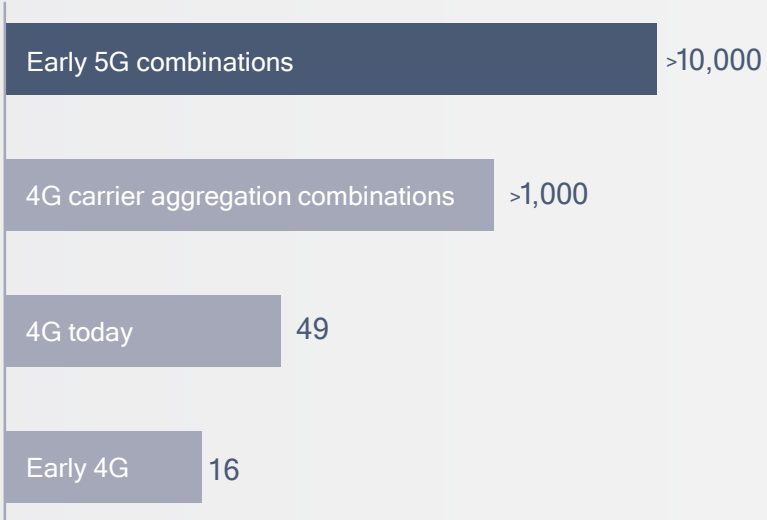
Complexity of mobile RF systems is accelerating

5G impacts RF-Front End design



Number of RF bands and band combinations

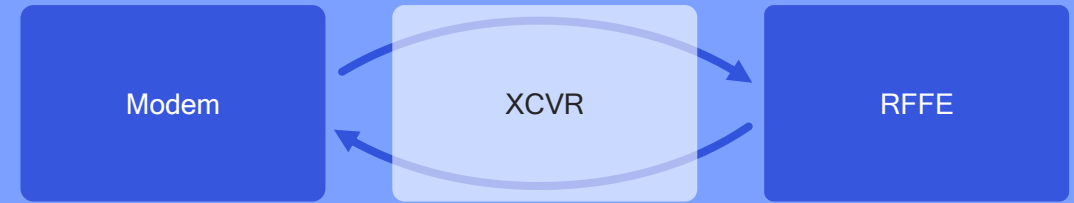
By technology generation



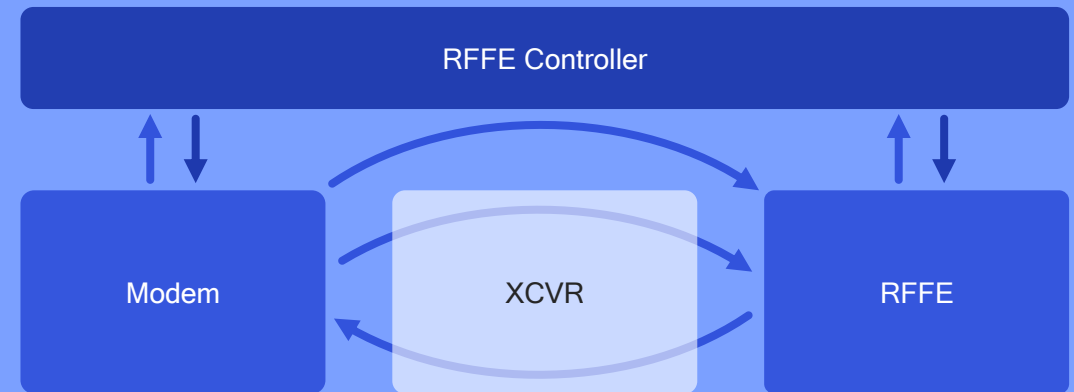
Tunable 5G RF-Front End

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

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OPPO

Andy Wu

Vice President



oppo

Committed to creating products of innovative
technology and aesthetics

Bring ultimate technology experience to young
people around the world

Qualcomm

Focus on technology

Deliver world-leading wireless solutions

Strategic Partner

Qualcomm

OPPO



Qualcomm Spectra™ ISP

OPPO and Qualcomm's customized optimization on ISP

OPPO R11

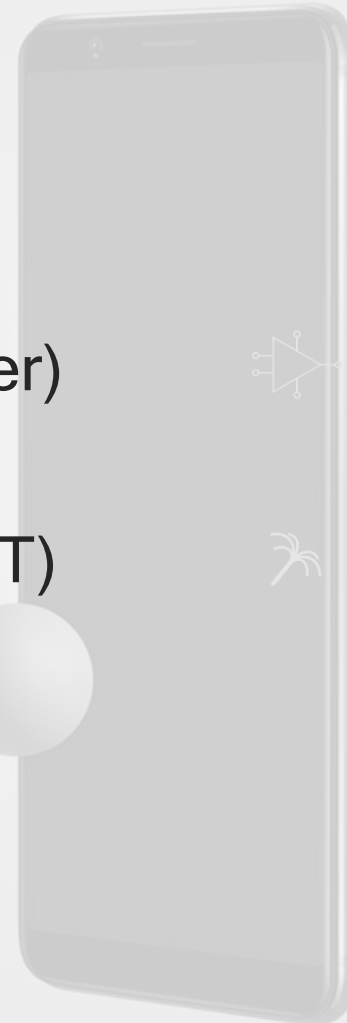
In Production



Smart antenna solution (Tuner)



Envelope tracking module (ET)



Tested and Validated



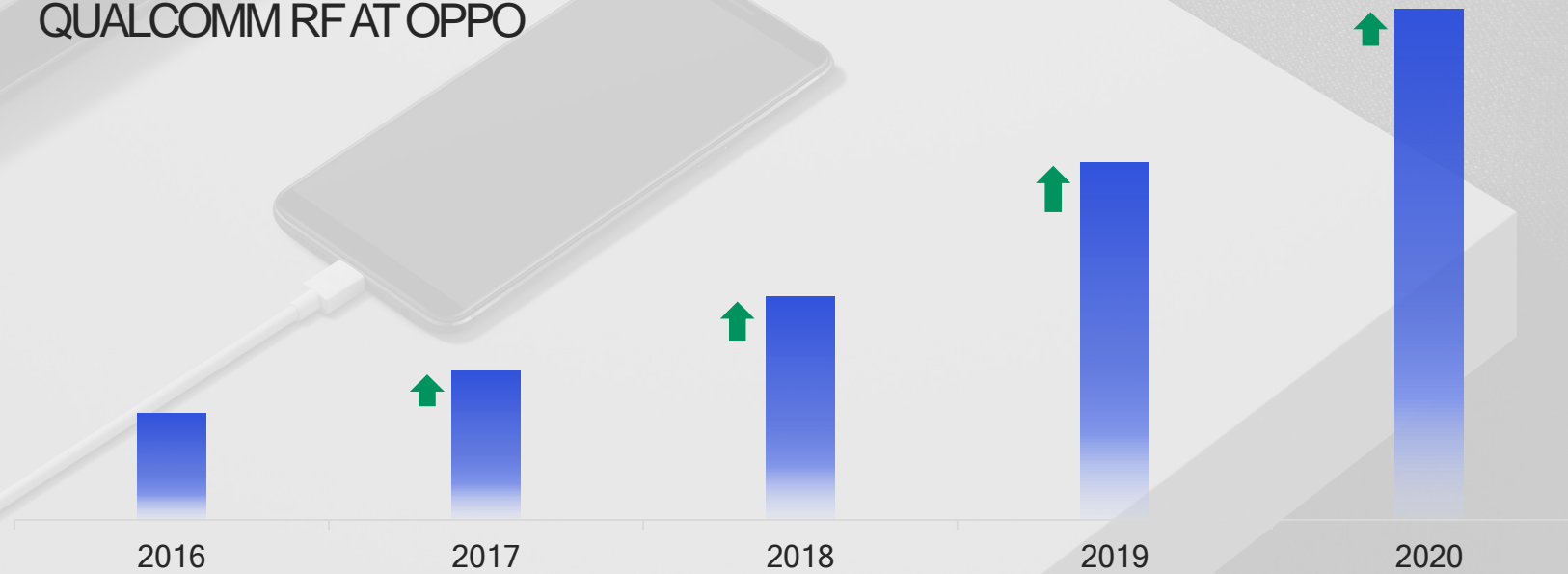
Qualcomm's power amplifier (PA)



Integrated RF modules designed for global SKU (PAMiD)

OPPO expanding RF cooperation with Qualcomm

QUALCOMM RF AT OPPO



The background features a hand holding a smartphone, with a stylized atomic model overlaid. The Qualcomm logo is on the left and the Oppo logo is on the right, separated by a vertical line.

Qualcomm | oppo

Qualcomm Tunable 5G RF-Front End
5G, New Era!

January 25, 2018

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vivo

Jesse Shi

Senior Vice President

The image features a dark blue background with abstract, geometric shapes in a lighter shade of blue. In the center, a silver smartphone is shown from a three-quarter perspective, with a gold-colored rectangular block partially visible behind it. To the right, the back of a gold-colored Vivo smartphone is shown, featuring a dual-camera system and the Vivo logo. The text 'Qualcomm' and 'vivo' are overlaid in white, with 'Qualcomm' positioned to the left of the smartphone and 'vivo' to the right. Below the smartphone, the text 'Strategic Partnership' is displayed in white.

Qualcomm

vivo

Strategic Partnership

Qualcomm RFFE behind full range of vivo star products



vivo Y79



vivo X20



vivo X20Plus



vivo Xplay6

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

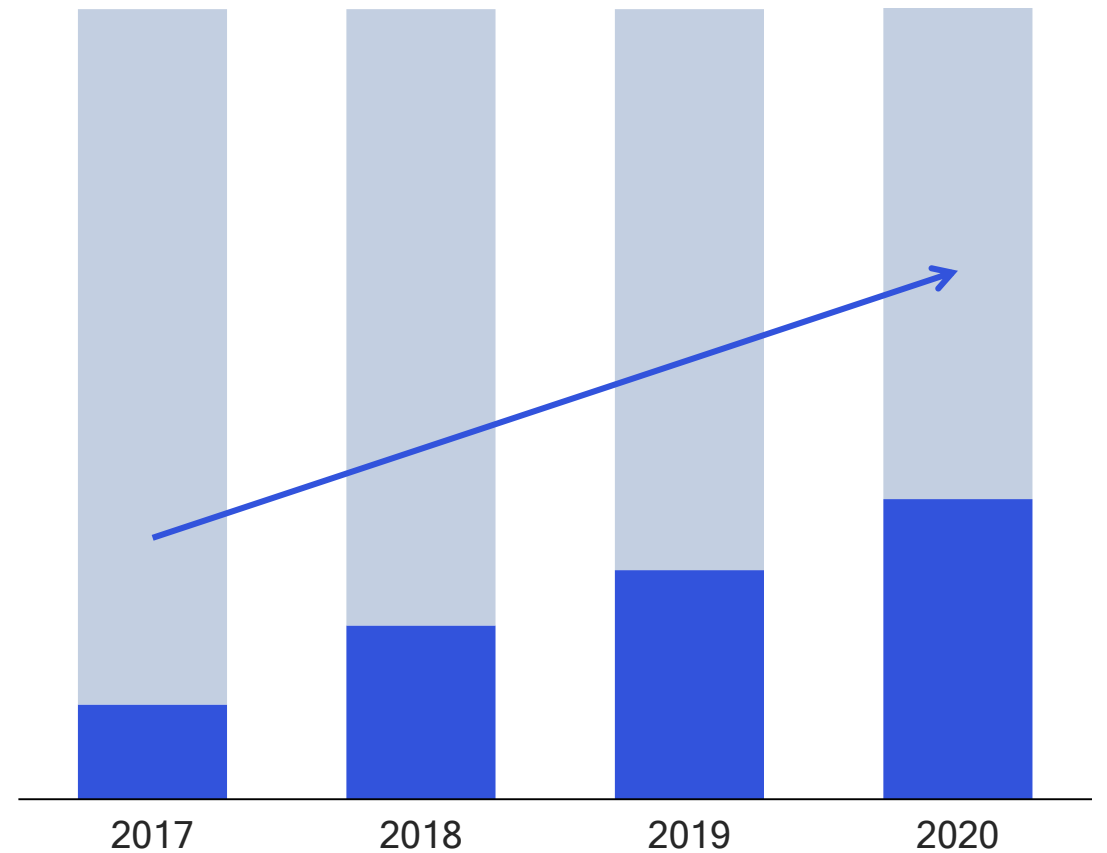


In Planning

- Antenna Tuners
- DRx Module
- Power Amplifier Modules
- Power Amplifier + Filter Modules

Qualcomm RFFE share to grow continuously

- Mature technology
- Superior performance
- Reasonable layout



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

To help vivo gain advantages in 5G era



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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

Making 5G NR a commercial reality in China in 2019



中国移动
China Mobile

January 25, 2018

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Join hands to pioneer a new 5G era

Mr. Zhengmao Li

Executive Vice President

China Mobile Communications Corporation

A graphic consisting of three concentric circles. The innermost circle is dark blue and contains a white outline of a world map. The middle circle is a medium blue, and the outermost circle is a lighter blue. The text '5G' is written in white, bold, sans-serif font, centered over the world map.

5G

Qualcomm

**Joining hands
to lead the world
to 5G**

5G Pioneer Initiative





Thank you!

Follow us on: **f** **🐦** **in**

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www.qualcomm.com & www.qualcomm.com/blog

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