Enabling the 5G AI Era

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5G

Accelerating globally

200

Operators with 5G commercially deployed

285+

Additional operators investing in 5G

5B+

5G smartphones to ship between 2020-2025

Sources – 5G commercial networks and operators investing in 5G: GSA 5G Market Snapshot - 2021 End of the Year. Cumulative 5G smartphone shipments: avg of CCS Insight (Sep 2021), CounterPoint Research (Dec 2021), IDC (Nov 2021), Strategy Analytics (Oct 2021).

What's next after four generations of 5G Modem-RF solutions?

1st gen
Snapdragon X50

- 3GPP Release 15
- Sub-6 and mmWave
- NSA, TDD
- Multi-SIM
- Qualcomm® 5G PowerSave
- Qualcomm® Smart Transmit
- Qualcomm® Signal Boost
- 10nm process

2nd gen
Snapdragon X55

- 3GPP Release 15
- Sub6 and mmWave
- NSA and SA
- TDD and FDD
- Qualcomm 5G PowerSave
- Qualcomm Smart Transmit
- Qualcomm Signal Boost
- Global multi-SIM
- Qualcomm® Wideband Envelope Tracking
- Dynamic Spectrum Sharing
- Integrated 5G to 2G
- 5G/4G carrier aggregation
- 7nm process

3rd gen
Snapdragon X60

- 3GPP Release 15
- Sub6, mmWave
- NSA and SA
- TDD and FDD
- Sub-6 CA across TDD/FDD
- 3rd-gen mmWave antenna module (QTM535)
- Voice-over-NR
- Qualcomm 5G PowerSave
- Qualcomm Smart Transmit
- Qualcomm Signal Boost
- Global 5G multi-SIM
- Qualcomm Wideband Envelope Tracking
- Dynamic Spectrum Sharing
- Integrated 5G to 2G
- 5nm process

4th gen
Snapdragon X65

- 10 Gigabit 5G
- 3GPP Release 16
- Sub6, mmWave and mmWave-sub6 aggregation
- 4th-gen Qualcomm® 545 mmWave antenna module
- Qualcomm® 5G PowerSave 2.0
- Qualcomm® Smart Transmit™ 2.0
- Qualcomm® AI-Enhanced Signal Boost
- Global 5G multi-SIM
- Qualcomm® Wideband Envelope Tracking (QET7100)
- Dynamic Spectrum Sharing
- Integrated 5G to 2G
- 4nm process
- NSA, SA, TDD, FDD
- FDD-TDD in 5G uplink CA

First wave of devices → Second wave → Raise performance bar → 10 Gigabit 5G era

Qualcomm 5G PowerSave, 5G PowerSave 2.0, Smart Transmit, Smart Transmit 2.0, Signal Boost and Wideband Envelope Tracking are products of Qualcomm Technologies, Inc. and/or its subsidiaries

Enabling the 5G AI era

Snapdragon
X70 5G modem-RF

Snapdragon® X70 5G Modem-RF System

World's 1st
Modem-RF
5G AI Processor

10 Gigabit 5G

World's only
modem-RF system
for all 5G bands from
0.6-41 GHz

Qualcomm mmWave Module and Qualcomm 5G AI Processor are products of Qualcomm Technologies, Inc. and/or its subsidiaries.

Harnessing the power of AI to enable breakthrough 5G performance and user experience

Qualcomm® 5G AI Suite

Unmatched speed, coverage, latency

Ultimate operator flexibility

Superior power efficiency

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AI to enable breakthrough real-world 5G performance

Qualcomm® 5G AI Suite

Unmatched speed, coverage, latency

Ultimate operator flexibility

Superior power efficiency

AI-based channel-state feedback and optimization

AI-based mmWave beam management for superior coverage and link robustness

AI-based network selection for superior mobility and link robustness

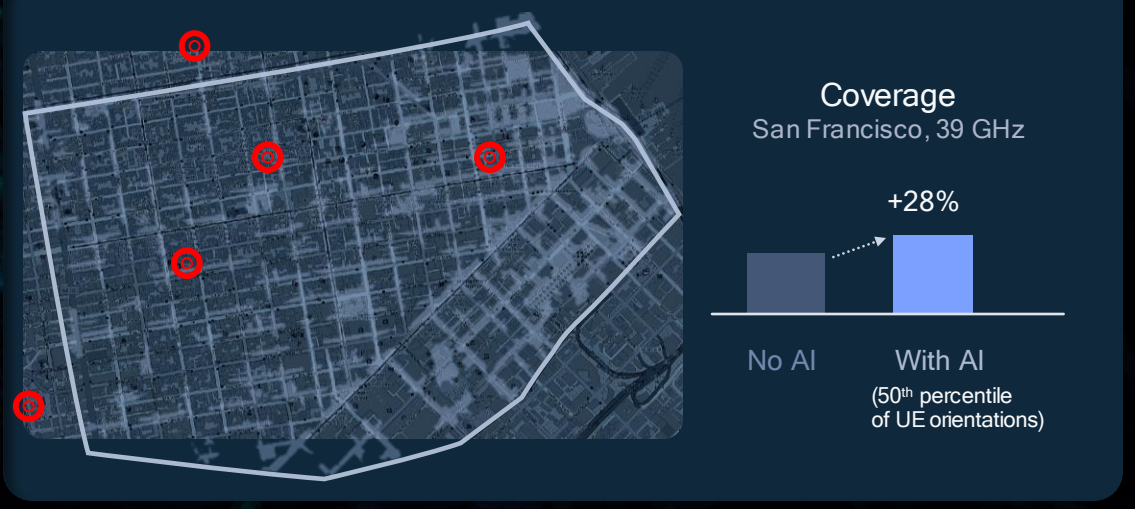
AI-based adaptive antenna tuning for improved speeds, coverage and power efficiency

Qualcomm® 5G AI Suite
for breakthrough 5G performance

AI-based
mmWave Beam Management

Enhanced mmWave
cell coverage and link robustness

Improved throughput
with increased mmWave coverage

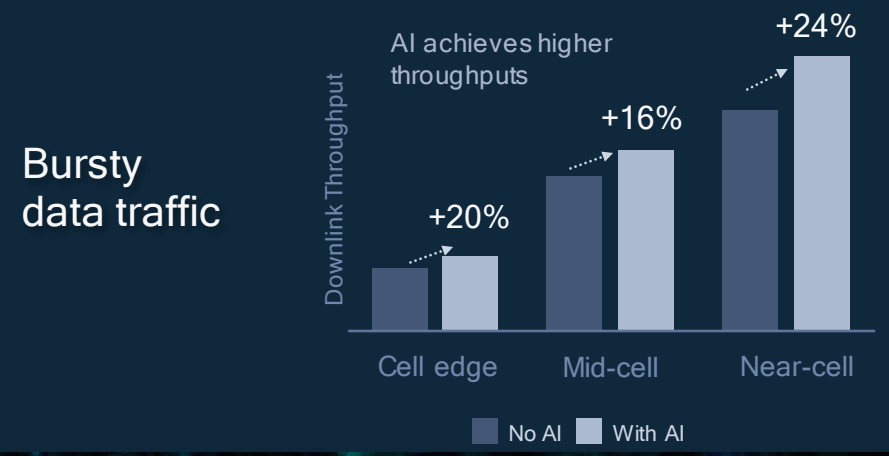


Qualcomm® 5G AI Suite
for breakthrough 5G performance

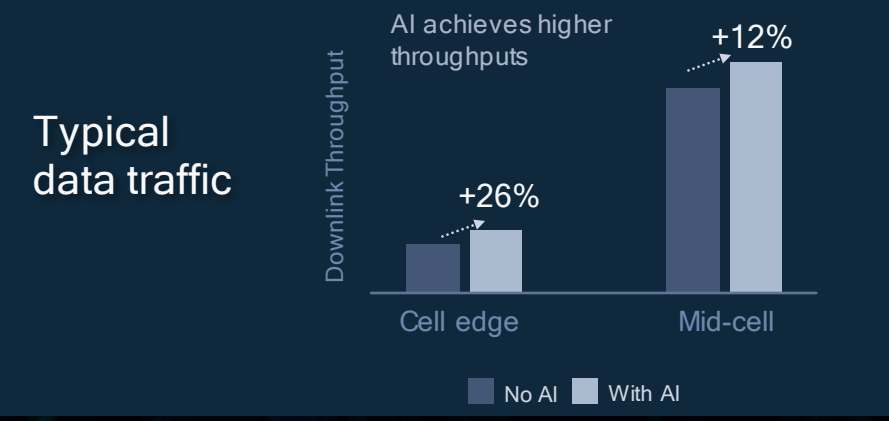
AI-based
Channel State Feedback & Optimization

Prediction and feedback of channel state helps improve throughput and other critical performance metrics

Bursty data traffic



Typical data traffic



Unmatched data speeds, coverage and low latency

- **10 Gigabit 5G**
- **4x Downlink** carrier aggregation
- **3.5 Gbps** peak uploads
- **Uplink** carrier aggregation
- **Switched uplink support** (TDD and FDD)
- **Qualcomm® 5G** Ultra-Low Latency Suite

Qualcomm 5G Ultra-Low Latency Suite is a product of Qualcomm Technologies, Inc. and/or its subsidiaries.

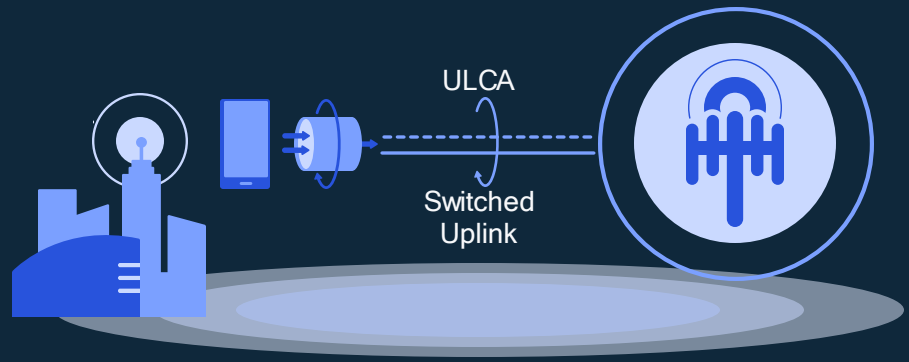
Superior uplink performance

3.5 Gbps
peak uploads

Uplink
carrier aggregation

Switched uplink support
(TDD and FDD)

100 MHz Envelope Tracking
support for uplink



Uplink Carrier Aggregation and/or Switched Uplink (TDD and FDD) support

Unmatched flexibility for global operators

mmWave
standalone support

Global Multi-SIM
including Dual SIM
Dual Active (DSDA)

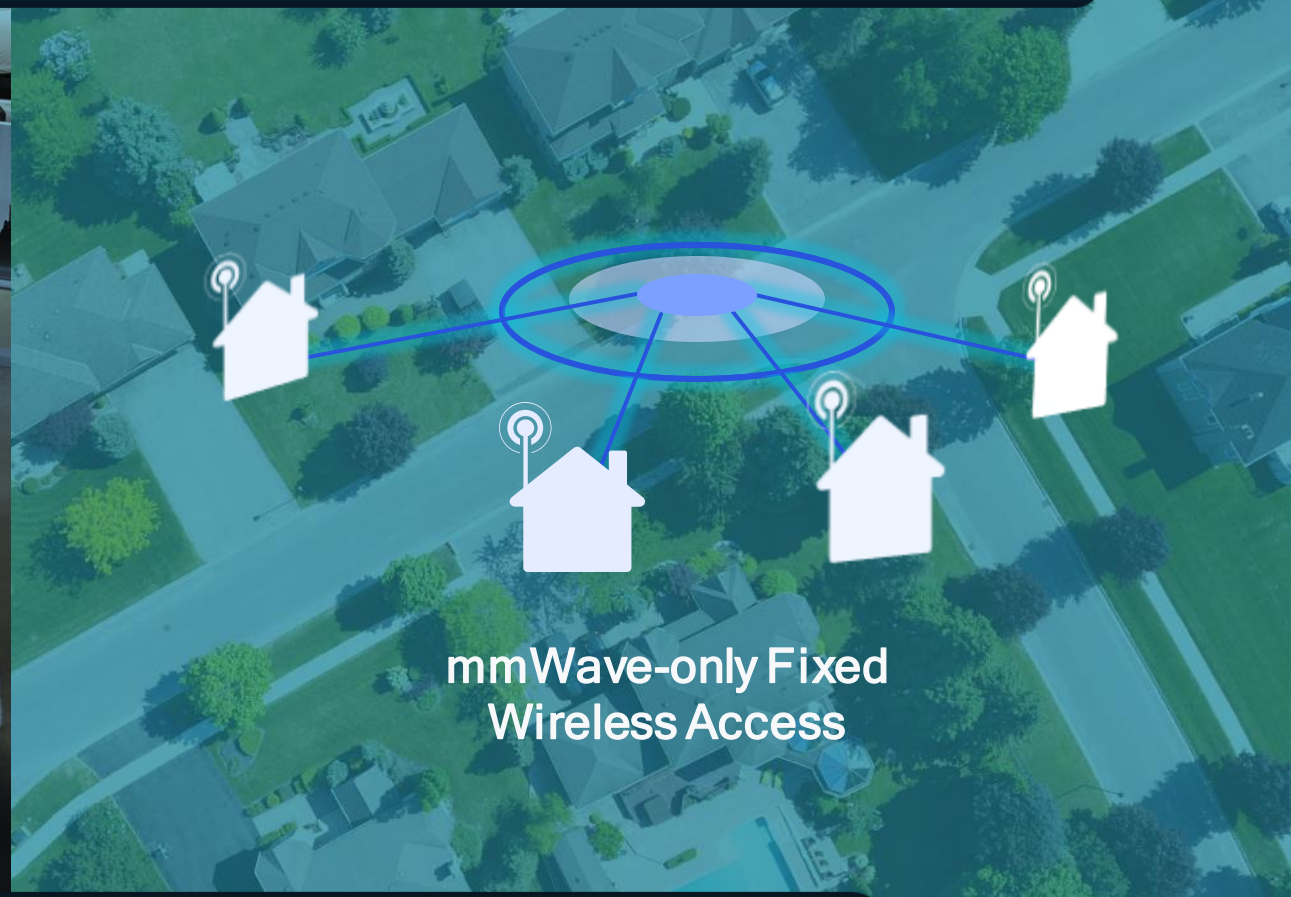
Spectrum Aggregation
(NR-DC, EN-DC)

Global 5G mmWave & sub-6 GHz
0.6-6 GHz / 24-41 GHz

Upgradeable architecture
for Release 16 acceleration

Standalone 5G mmWave to accelerate services deployment

mmWave-only Enterprise and Private Networks



mmWave-only Fixed Wireless Access

Standalone 5G mmwave

Allows MNOs and service providers to deploy services using only mmWave

More flexible spectrum requirements for service providers

Superior power efficiency and long battery life

Qualcomm® 5G AI Suite

Unmatched speed, coverage, latency

Ultimate operator flexibility

Superior power efficiency

Qualcomm® 5G PowerSave Gen 3
Up to **60%** improved power efficiency*

AI-based adaptive antenna tuning

Qualcomm® QET7100
Wideband Envelope Tracking

Qualcomm 5G PowerSave and Qualcomm QET7100 are products of Qualcomm Technologies, Inc. and/or its subsidiaries.

* Compared to configurations with PowerSave features disabled

Harnessing the power of AI to enable breakthrough 5G performance and user experience

Qualcomm® 5G AI Suite

Unmatched speed, coverage, latency

Ultimate operator flexibility

Superior power efficiency

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