

# Qualcomm® X100 5G RAN Accelerator Card

The Qualcomm X100 5G RAN Accelerator Card is designed to deliver a high-performance, low-latency, power-efficient, and customizable turnkey solution for ease of deployment, and to accelerate operator and infrastructure vendor adoption of virtualized RAN platforms. This solution is a PCIe inline accelerator card that is designed to seamlessly plug into standard Commercial-Off-The-Shelf (COTS) servers to offload CPUs from latency-sensitive and compute-intensive 5G baseband L1/Physical Layer functions, such as demodulation, beamforming, channel coding, and Massive MIMO computation needed for high-capacity deployments. For use in public or private networks, this accelerator card aims to give carriers the ability to increase overall network capacity and fully realize the transformative potential of 5G. With this inline accelerator card, Qualcomm Technologies, Inc. is uniquely positioned to drive the evolution of cellular networks and lead the industry towards 5G virtualized networks.

## Cutting-Edge Cloud-Optimized Solution with High-Performance and Leading Power Efficiency



The Qualcomm X100 5G RAN Accelerator Card is an optimized and virtualized product, with integrated hardware acceleration completely independent of CPUs designed to deliver high-performance, low-latency, and power-efficient solutions. It is expected to enable cloud-native and virtualized 5G network deployments by offloading server CPUs from compute-intensive 5G baseband processing, resulting in increased performance and lower total cost of ownership (TCO) by reducing power consumption and the numbers of CPUs and cores required by up to 50%.

## O-RAN Compliant Design with Architectures Flexibility



The Qualcomm X100 5G RAN Accelerator Card is an O-RAN compliant solution, supporting a range of baseband function split options—including all 7.x split functions, as well as future split options (e.g., 7.3). The Qualcomm X100 5G RAN Accelerator Card comes with an integrated network interface card (NIC) for Fronthaul with low-PHY functions. This integrated solution provides OEMs and operators with deployment flexibility and facilitates scalable and cost-effective 5G RAN network spanning mmWave and sub-6 GHz. The solution is designed with an upgradable architecture of L1 software to enable rapid rollout of future 3GPP release features, extend platform lifespan, and help reduce total cost of ownership.

## Fully Integrated and Customizable Turnkey Solution



The Qualcomm X100 5G RAN Accelerator Card is a PCIe inline accelerator card, with concurrent sub-6 GHz and mmWave baseband support designed to simplify 5G deployments by offering a customizable plug-in solution with commercial-grade Layer 1 (L1) software updated to the latest 3GPP specification. The Qualcomm X100 5G RAN Accelerator Card also offers integrated O-RAN fronthaul and 5G NR layer 1 High (L1 High) processing, including beamforming processing and support for simultaneous Massive MIMO 64T64R sectors, that will improve user experiences by helping virtualized and open RAN platforms to support the high-capacity and low-latency workloads of future networks.

## Features

- Integrated beamforming processing
- Supporting 3 sector Massive MIMO 64T64R [100MHz with 70% traffic load]
- Upgradable architecture of L1 software

## Specifications

### Architecture

- Inline Accelerator independent of CPU

### Function

- L1 High Inline Acceleration

### Layers

- Up to 16DL/ 8UL per CC

### O-RAN

- Support all 7.x split functions

### PCIe Interface

- X16 lane Gen 4

### Fronthaul Interface

- Integrated 300Gbps Ethernet
- 3x QSFPs, eCPRI

### PCIe Card Type

- FHHL

### Clock Interface

- GNSS RF Input or 10MHz/PP1S Input

### Thermal Cooling

- Passive

### Memory

- 8GB LPDDR5 at 3.2GHz

### Max Power

- 35W [fully loaded]

### Software

- Commercial and Customizable L1 SW



# Qualcomm® QRU100 5G RAN Platform

With the accelerated growth in mobile data traffic, network operators are seeking platforms to satisfy their customers' needs while addressing the complexities of supporting the demands of next-generation networks for high capacity and low latency needed to enhance user experiences. Our Qualcomm QRU100 5G RAN Platform delivers a high-performance, O-RAN compliant, energy-efficient 5G solution, designed to address such challenges. The Qualcomm QRU100 5G RAN Platform features support ranging from mmWave to sub-6 GHz Massive MIMO, with 64T64R capabilities to 4T4R Remote Radio Heads (RRH) to enhance coverage, improve cell-edge data speeds, as well as increase the overall capacity of the network. This will also enable enhanced speed in the rollout of 5G networks with high-performance O-RAN compliant infrastructure products. As a result, the Qualcomm QRU100 5G RAN Platform will simplify and lower total cost of ownership of 5G deployments and will help drive the transition toward modern networks.

## Comprehensive High-Performance Modem-RF Solution



The Qualcomm QRU100 5G RAN Platform is designed for superior radio performance, including high-power, high-capacity operation. The platform features a comprehensive 5G Modem-RF System, including baseband, transceiver, and (in the case of mmW) front-end and antenna modules. The high-performance and power-efficient solution supports Massive MIMO capabilities, with configuration of up to 64T64R to improve network coverage and capacity.

## O-RAN Compliant Design with Architectures Flexibility



The Qualcomm QRU100 5G RAN Platform is an O-RAN compliant solution, that supports a range of baseband function split options, including all 7.x split functions and future split functions (e.g., 7.3). This flexibility provides OEMs and operators with deployment flexibility and facilitates scalable and cost-effective 5G RAN networks spanning mmWave and sub-6 GHz. This will provide operators with tremendous flexibility, to deploy unprecedented peak speeds with available spectrum resources.

## Advanced Cellular Technologies



The Qualcomm QRU100 5G RAN Platform applies leading 5G mobile expertise to support feature-rich cellular infrastructure that combines powerful performance with leading power efficiency. The Qualcomm QRU100 5G RAN Platform supports advanced features that include multi-operator RAN sharing, dynamic spectrum sharing (DSS), and digital beamforming. This platform is a scalable solution, with support for Massive MIMO with 64T64R, 32T32R, 8T8R, and 4T4R configuration, in addition to legacy RRHs that will allow customers to maximize engineering efficiency and time to market. Furthermore, the platform offers highly optimized and flexible Crest Factor Reduction (CFR)/Digital Pre-Distortion (DPD) architecture, delivering an end-to-end complete DPD solution to address various Power Amplifier (GaN and LDMOS) characteristics and challenges, as well as multiple carriers in both contiguous and non-contiguous scenarios.

## Features

- Multi-operator RAN sharing, up to 8 CCs per port
- Dynamic spectrum sharing (DSS)
- Digital beamforming
- Modulation: DL 1024 QAM, UL 256 QAM

## Specifications

### Architecture

- RU + RFIC

### T/R Configurations

- Scalable solution for 64T64R, 32T32R, 8T8R, and 4T4R

### Layers

- 16 layers

### Bandwidth

- FR1 : 400 MHz
- FR2 : 1000 MHz

### O-RAN

- Supports all split functions
- Compatible with future split (e.g., 7.3)

### DPD

- Advanced end-to-end solution, with highly optimized and flexible architecture

### Fronthaul

- Integrated 300Gbps Ethernet

