Premium processor combines powerful computing, extreme edge AI processing, Wi-Fi 7, and robust video and graphics for a wide range of use cases for the Internet of Things (IoT).

Our QCS8550 and QCM8550 Processors let you do more with less. We combine low-power, maximum heterogeneous computing, Wi-Fi 7 connectivity, and vivid graphics and video with optimized AI architecture for extreme edge AI processing. With just one system, you can develop a wide range of performance heavy IoT applications including autonomous mobile robots, industrial drones, camera, edge AI box, video collaboration, video transcoding, and cloud gaming.

### Superior performance
- Provides a single, flagship processor enabling next-generation features and best-in-class performance across connectivity, compute processing, camera, AI, security, and audio for performance-heavy IoT applications
- Enterprise-level connectivity with Wi-Fi 7 delivering speeds up to 5.8 Gbps
- 8th gen AI engine provides 10x performance over previous gen

### Optimized AI architecture
- AI architecture is optimized to deliver extreme processing throughput or compute requirements for IoT applications across a wide range of use cases
- Increases throughput of AI in addition to performance so you can do more with less
- Enables new use cases and business models by supporting how AI models are evolving

### Robust video and graphics
- Robust video and graphics processing enables immersive gaming, video collaboration, and video streaming experiences
- Powerful graphics processing unit (GPU) allows for multiple gaming applications to run concurrently with richer game content over the cloud
QCS8550/QCM8550 Target Applications

- Autonomous mobile robots (AMRs)
- Industrial drones
- Retail
- Video collaboration
- Video transcoding
- Cloud gaming
- Edge AI gateways

Features

- Qualcomm® Kryo™ CPU; 64-bit architecture
  - 1 Prime core, up to 3.36 GHz with Arm® Cortex®-X3 technology
  - 4 Performance cores, up to 2.8 GHz
  - 3 Efficiency cores, up to 2.0 GHz
- Support for LP-DDR5x memory up to 4200 MHz - Memory Density: up to 16 GB
- Qualcomm® Adreno™ 740 GPU
- Concurrent GPS, Glonass, BeiDou, Galileo, QZSS, NavIC
- Sensor-Assisted Positioning 6.0
- EVA: Computer vision processor for improved video denoising, digital video stabilization and image correction adjustment
- Qualcomm Spectra™ Image Signal Processor - Cognitive ISP, Triple 18-bit ISPs
- Up to 36 MP triple camera @ 30 FPS ZSL
- Up to 64+36 MP dual camera @ 30 FPS ZSL
- Up to 108 MP single camera @ 30 FPS ZSL
- Up to 200 MP Photo Capture
- NPU: Qualcomm® Hexagon™ Tensor Processor (HTP) with Hexagon Vector eXtensions (HVX) and Hexagon Matrix eXtensions (HMX)
- Modem: Only with QCM8550
  5G mmWave and sub-6 GHz, standalone (SA) & non-standalone (NSA) modes, standalone mmWave & mmWave-sub6 dual connectivity, FDD, TDD; mmWave: 8 carriers, 2x2 MIMO; Sub-6 GHz: 4x4 MIMO
- Qualcomm Aqstic® audio codec
- Qualcomm Aqstic® smart speaker amplifier
- Total Harmonic Distortion + Noise (THD+N), Playback: -108dB
- Qualcomm® Audio and Voice Communication Suite
- Extended life for hardware and software support

To learn more visit: qualcomm.com

QCS8550/QCM8550 Specifications

<table>
<thead>
<tr>
<th>Process Node/Package</th>
<th>4nm, 15.6 x 14.0mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>1 GoldPlus @3.2 GHz + (2+2) Gold @2.8 GHz + 3 Silver @2.0 GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>4 x 16 LPDDR5/5x @4200MHz</td>
</tr>
<tr>
<td>Modem</td>
<td>Release 16 3GPP (sub6 + mmW) (Only with QCM8550)</td>
</tr>
<tr>
<td>Location</td>
<td>Gen9 v5, GPS L1/L5/L2C, GLONASS, BDS B1/B1C/B1A/B1B, QZSS L1/L5/L2C, NavIC L5</td>
</tr>
<tr>
<td>Connectivity</td>
<td>WLAN: 802.11be, 2x2 MIMO, Bluetooth® 5.3</td>
</tr>
<tr>
<td>GPU</td>
<td>Adreno 740 GPU Ray tracing, OpenGL ES 3.2, Vulkan 1.2, OpenCL 3.0 full profile, Adreno NN direct</td>
</tr>
<tr>
<td>Compute DSP</td>
<td>V73 AI-optimized tensor processor, six threads scalar DSP</td>
</tr>
<tr>
<td>Sensor DSP</td>
<td>Qualcomm® Sensing Hub 3.0</td>
</tr>
<tr>
<td>AI</td>
<td>Dual eNPU V8, 4 x HVX, HMx, 4/8 INT8, 12 FP16 TOPs</td>
</tr>
<tr>
<td>Camera</td>
<td>18 bpp, 64+36 MP30, or 3 x 36 MP30 or 1 x 108 MP30 fps ZSL, 8 x DPHY 1.2/CPHY 2.0, 3 IFE + 2 IFE Lite, Always-On</td>
</tr>
<tr>
<td>Display Technology</td>
<td>QHD2k40 (embedded) + 1 x 4k60 (external) w/ MST; 2 x DSI, 1 x DPl 1.4 over USB-C</td>
</tr>
<tr>
<td>Video</td>
<td>Video decode up to 4k2160@8K60; Video encode up to 4k2160@8K30, AV1 decoder</td>
</tr>
<tr>
<td>Audio DSP</td>
<td>Hexagon V73M 2Cluster – 4 Thread DSP, 5.5 MB of LPI memory, AI Processor (eNPU) v8, to accelerate neural networking use cases</td>
</tr>
<tr>
<td>Storage/Peripherals</td>
<td>1xPCIe 2-lane Gen4, 1xPCIe 2-lane Gen 3, USB 3.1 Gen 2 with DP + data, eUSB</td>
</tr>
<tr>
<td>Security Features</td>
<td>Qualcomm® Trusted Execution Environment (TEE) v5.3, Qualcomm® Type-1 Hypervisor enables multiple trusted VMs (TVMs)</td>
</tr>
</tbody>
</table>