Qualcomm

Qualcomm® Smart Audio 400 Platform (QCS400)

Designed to bring together the building blocks for developing a smart speaker in a single, flexible platform that helps reduce product development time and complexity.

The Qualcomm Smart Audio 400 Platform is designed to include a powerful combination of superior sound quality, AI and connectivity to help deliver cutting-edge power management, advanced voice UI and great audio experiences – and it supports cloud-based smart assistant services.

This unique and flexible end-to-end smart speaker platform is built around the Qualcomm® QCS400 SoC series with on-board Qualcomm® Artificial Intelligence (AI) Engine, that is dedicated specifically for low-power, high-performance smart audio applications.

Our Smart Audio 400 Platform supports Qualcomm® DDFA™ amplifier technology, Qualcomm® aptX™ Adaptive audio, up-to 12-channel audio processing, as well as scalable connectivity solutions for low-latency multi-channel audio streaming throughout the home.

Enhanced voice assistance capabilities include low-power always-on voice activation, simultaneous multi-keyword detection, multi-channel echo cancellation and local automatic speech recognition, as well as support for voice services from major providers.

To further streamline and simplify smart speaker development, the Qualcomm Smart Audio 400 Platform is available in the form of a development kit that includes the platform's rich features, along with external speaker casing, bi-amped, two-way speakers, and a six-microphone array board as well as multiple other components in a reference design to help developers more quickly scope and design their product.

Highlights

Integrated single-vendor platform

Reduce scoping and development time by getting the components for a smart speaker in a single-vendor platform, helping to reduce BOM sources and designed to eliminate the need to develop, integrate and tune complex far-field voice technologies with multi-keyword detection and beamforming.

Qualcomm AI Engine

Support smarter and more robust Voice UI experience, as well as machine-learning-based local Automatic Speech Recognition (ASR) pre-loaded on the Qualcomm Smart Audio 400 Platform.

Superior quality audio and voice

Develop smart speakers that support premium sound quality and enhanced voice pickup, with up to 12 channel audio processing, aptX audio and DDFA. The development kit supports low-power far-field multi-keyword detection with low-power optimization, noise suppression, beamforming and multi-channel echo cancellation technology.

Comprehensive smart speaker development kit

Further decrease smart speaker development time and complexity with our Smart Audio 400 Platform Development Kit – a unique, end-to-end reference solution for smart speaker products, designed to support simplified integration of the major cloud-based voice assistants with the rich and differentiating features of our smart audio platform, and then scale smart speaker production to volume.
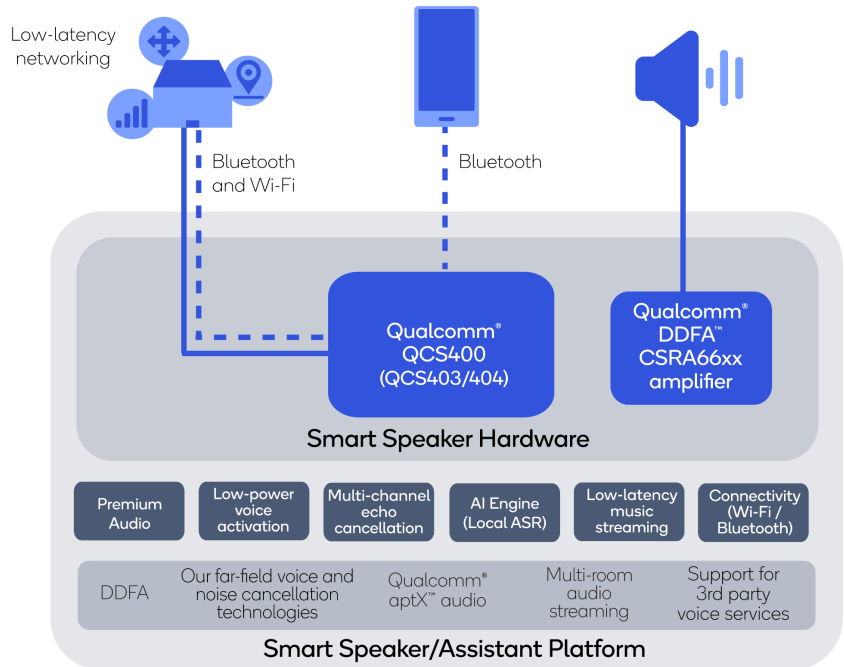
Qualcomm Smart Audio 400 Platform Applications

- Designing and developing a smart speaker
- Designing and developing a smart home assistant

Bluetooth

Features

- Designed to include the building blocks for developing a smart speaker in a single, flexible platform
- Advanced QCS400 smart audio SoC for high-performance and low-power
- Integrated far-field multi-keyword voice pick up technologies with echo cancellation and beamforming
- Support for leading cloud-based voice platforms
- Support for high resolution audio, with aptX audio codecs, DDFA and powerful audio post-processing
- Pre-integrated low-latency in-room and multi-room networked audio
- Advanced wireless connectivity options, with Bluetooth, Wi-Fi and Zigbee coexistence solutions
- Comprehensive development kit available with example design and supporting documentation

Platform Block Diagram

Low-latency networking

Bluetooth and Wi-Fi

Bluetooth

Qualcomm® QCS400 (QCS403/404)

Qualcomm® DDFA™ CSRA66xx amplifier

Smart Speaker Hardware

| Premium Audio | Low-power voice activation | Multi-channel echo cancellation | AI Engine (Local ASR) | Low-latency music streaming | Connectivity (Wi-Fi / Bluetooth) |

| DDFA | Our far-field voice and noise cancellation technologies | Qualcomm® aptX™ audio | Multi-room audio streaming | Support for 3rd party voice services |

Smart Speaker/Assistant Platform

Related Products

Product	Part Number
Qualcomm Smart Audio 400 Platform Development Kit (QCS403)	DK-SMART-AUDIO-QCS403-2-A
Qualcomm Smart Audio 400 Platform Development Kit (QCS404)	DK-SMART-AUDIO-QCS404-0-A

For additional Qualcomm product information go to: createpoint.qti.qualcomm.com

Product Kit: Speaker

Platform Specifications

	Qualcomm Smart Audio 400 Platform
Wi-Fi	11ac (11ax ready)
Bluetooth	Bluetooth 5.0 compliant (5.1 ready)
DSP	Dual DSP
GPU	Qualcomm® Adreno™ 306 GPU
Audio	Up to 12 channels. Support for aptX audio, DDFA, Dolby Atmos® and DTS:X technologies. Low-latency multi-room audio streaming
Operating Systems	Linux

Qualcomm Adreno is a product of Qualcomm Technologies, Inc. and/or its subsidiaries.

To learn more visit: qualcomm.com