

# Qualcomm® Smart Audio Platform Development Kit

A comprehensive, customizable development kit and example design that helps to streamline the process of developing smart speakers.

The Qualcomm Smart Audio Platform Development Kit is designed to include the building blocks for creating a smart speaker, making it simpler for audio manufacturers to start developing straight out of the box. By helping to reduce the development time, effort and costs associated with designing and customizing smart speaker products, the Qualcomm Smart Audio Platform Development Kit can help audio manufacturers to create differentiated smart speaker products, and capitalize on growing smart speaker opportunities across a range of price points.

Based on our highly-flexible Qualcomm Smart Audio Platform, the development kit is designed to bring together a powerful combination of our processing, connectivity, voice user interface and premium audio technologies in a unique end-to-end example design for smart speakers.

Developers have the flexibility to choose one of two operating systems: either Linux, along with support for Amazon Alexa Voice Service (AVS), Qualcomm® aptX™ audio, and our multi-room networked audio technology; or Android Things™, which includes support for the Google Assistant with Cast built-in.

Additional extensions are available that bring support for our advanced audio codecs and speaker amplifiers, such as Qualcomm® DDFA™ amplifier chipsets with premium Class D digital amplifier technology.

## Kit Contents

Two variants of the Qualcomm Smart Audio Platform Development Kit are available:

### with Acoustics

DK- SMART-AUDIO-APQ8009-0-A

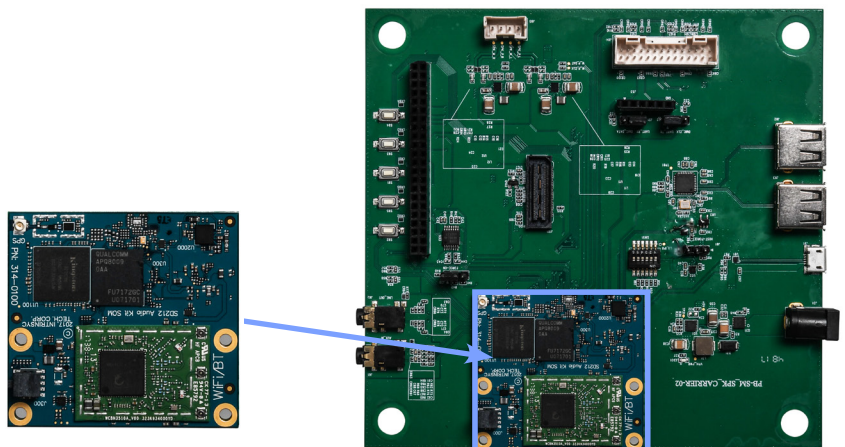
- APQ8009 SoM (System-on-Module)
- Carrier board
- Six microphone array board
- Microphone array module
- Speaker casing and dual-drivers
- Power supply
- Cables: power cable, carrier board to speaker cable
- Antennas
- Quick Start Guide and User Guide
- Design files and schematics

### without Acoustics

DB- SMART-AUDIO-APQ8009-0-A

- APQ8009 SoM
- Carrier board
- Power supply
- Power cable
- Antennas
- Quick Start Guide and User Guide

## SoM and Carrier Board





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### Features

- Wi-Fi certified SoM featuring the APQ8009 processor and containing key system components
- Best in class connectivity with 2x2 MIMO 802.11ac, Bluetooth® 4.2 with profiles such as A2DP (SBC, AAC, MP3, aptX), HFP and AVRCP
- High-quality Bluetooth/Wi-Fi coexistence through separate Bluetooth and Wi-Fi signal paths
- Reference speaker casing with bi-amped, two-way speakers
- Six-microphone array board designed to meet far-field voice user interface performance quality
- Multi-microphone far-field voice with keyword detection, noise suppression, beamforming, and stereo echo cancellation technology
- Premium audio, high resolution 24-bit audio and multi-room networked audio
- Support for leading voice assistants
- Compatible with our DDFA Class D digital amplifier which supports a superior listening experience
- Qualcomm® Hexagon™ SDK which includes a rich set of tools which support customization of the Hexagon DSP software and help to reduce development time and effort

### Speaker Casing

(Included in Qualcomm Smart Audio Platform Development Kit with Acoustics)



- 360 degree audio
- Bi-amped, 2-way speakers
- Detachable Mic Array Module
- Includes both TDM and PDM microphones
- Buttons: Power/Vol+/Vol-/Activate/Mute
- RGB LEDs with LED controller
- Dedicated Mute LED indication

### SoM Specifications

<b>Dimensions</b>	46.5 x 50mm
<b>Processor</b>	<b>APQ8009</b> Quad-core Arm A7 32-bit CPU @ up to 1.3GHz Hexagon V56 DSP Qualcomm® Adreno™ 304 GPU
<b>Connectivity</b>	<b>QCA9379</b> 2x2 11ac MIMO + Bluetooth/Bluetooth Low Energy v4.2 with integrated RF front end
<b>Memory/Storage</b>	1GB LPDDR3 RAM/ 4GB eMMC Flash
<b>PMIC</b>	<b>PM8916</b>
<b>GPS</b>	<b>WGR7640</b>
<b>Audio Codec</b>	<b>WCD9326</b>
<b>Interfaces</b>	UART, USB 2.0, I <sup>2</sup> C, TDM mode capable I <sup>2</sup> S, SPI, GPIOs, Aux input and Line out
<b>Operating Systems</b>	Linux Embedded, Android Things

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### Ordering Information

Product	Part Number
Qualcomm Smart Audio Platform Dev Kit with acoustics	DK- SMART-AUDIO-APQ8009-0-A
Qualcomm Smart Audio Platform Dev Kit (without acoustics)	DB- SMART-AUDIO-APQ8009-0-A

### Software Development Kit

A rich set of tools is available to help customize the Hexagon DSP software and support reduced development effort.

Visit [Qualcomm® Developer Network](https://developer.qualcomm.com/software/hexagon-dsp-sdk) to download the dedicated Hexagon DSP SDK.

<https://developer.qualcomm.com/software/hexagon-dsp-sdk>

