

Qualcomm® QCC5171 Earbud Reference Design

Premium tier occluded earbud reference design with Qualcomm TrueWireless™ Mirroring and 3rd Generation Qualcomm® Adaptive Hybrid Active Noise Cancellation (AANC)

The truly wireless earbud industry is growing rapidly and consumers are demanding much richer functionality from their devices, so it is important for manufacturers to stay ahead of the curve by bringing innovative new features to market quickly.

The QCC5171 Earbud Reference Design is designed to provide a flexible development platform for innovation that supports the latest ADK features and helps to reduce development time.

This reference design platform is based on the QCC5171 Bluetooth Audio SoC and is designed for the high-end premium segment with support for the following features:

- Designed to offer extremely low-power performance for extended playback time and battery life
- Single-chip Bluetooth® containing the power management, audio DSP, application processor, Bluetooth RF, GPIO and audio inputs and outputs
- 3rd Gen. Qualcomm AANC with hardware leak-through
- Support for LE Audio
- Infrared proximity sensor for in/out of ear detection
- 1-button sensor touch control and LED user interface
- Fast 2-wire Comms between Earbuds and Charger Case via +5V and ground Pins
- One analog and two ECM microphones
- Bone Conducted Voice Sensor
- 10mm, 32Ω speaker
- 85mAh / 590mAh battery (earbud / charging case)
- Earbuds using a 6-layer rigid-flex PCB design
- FCC Pre-Certification Testing has been performed and met
- Ear interface rubbers supplied in small, medium and large sizes

Kit Contents

- Welcome Guide
- Left and right Earbud
- Ear interfaces small, medium, large
- Charger case
- USB cable



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Features

- Software delivered as a binary image using ADK22.2 with support for modifications via the ADK workspace
- Qualcomm TrueWireless Mirroring with support for dynamic role swapping and single Bluetooth address management
- Snapdragon Sound™ Technology
- Qualcomm® aptX™ Adaptive 24bit/96kHz, SBC, AAC-LC audio codec support
- 3-mic Qualcomm® cVc™ echo cancellation and noise suppression (ENCS) for superior audio when in a voice call
- Over the air update (OTAU) support via GAIA v3
- Qualcomm® Bluetooth High Speed Link
- User controllable EQ and EQ presets (via GAIA app)
- In/out charger case detection
- RSSI based primary/secondary earbud handover
- Multipoint
- Low Latency Gaming mode audio
- Support for voice prompts and tone prompts
- Support for Amazon Tap-to-talk Voice Assistant for Android
- Support for Google FastPair
- Microsoft Swift Pair
- Always On Voice support for Amazon Alexa Voice Services and Google Assistant¹

Specifications

Bluetooth Version	5.3
Bluetooth RF Tx/Rx Performance (conducted)	Max. RF Tx Power: 15dBm (typ) Rx sensitivity (BR): -97dBm (typ)
FCC Pre-Scan 13dBm	Pass
Antenna Performance Efficiency	>10%
Qualcomm TrueWireless Range	Outdoor ² , no Wi-Fi interference: >40m Indoor, no Wi-Fi interference: >60m Indoor, with Wi-Fi interference: >60m
3-mic cVc Noise Reduction Technology	Greater 0.5 MOS improvement
Digital Assistant	Support for Amazon Voice Services Support for Google Audio Accessories

² Outdoor range measured in low reflection environment (baseball field with grass floor)

Ordering Information

Product	Part Number
QCC5171 - Earbud Reference Design with Qualcomm TrueWireless Mirroring, Qualcomm Active Hybrid ANC	DK-QCC5171-EarbudRD-A-0
Qualcomm® Bluetooth Developer Licence (ADK)	DL-BDEV-10002-1A-0

¹ Our reference design platform includes features designed to support Amazon Alexa Voice Services and Google Assistant technology. In order to use voice assistants, the customer must obtain the voice assistant technology directly from the relevant voice assistant provider and our ADK, then compile a custom software build.

To learn more visit: [qualcomm.com](https://www.qualcomm.com)

Snapdragon, Snapdragon Sound, Qualcomm aptX, Qualcomm cVc, Qualcomm Bluetooth High Speed Link and Qualcomm Bluetooth Developer Licence are products of Qualcomm Technologies, Inc. and/or its subsidiaries.