

# Jacoti hearingKIT®

Library that allows development of real-time audio applications for embedded and mobile systems.

## Overview

Jacoti HearingKit® is a software development kit (SDK) that allows developing real-time audio applications with the purpose of adapting the sound to the characteristics of the audio and the listeners themselves, namely their hearing loss or personalisation needs. It offers a cross-platform C and C++ implementation, which is used to provide hearing assessment, hearing loss compensation and sound personalisation on wireless headsets, mobile computers, smartphones, car audio system, TV's, home entertainment or any digital audio system.

Jacoti HearingKit® technology allows compensating the hearing loss of individuals by applying a series of algorithms such as Hearing Loss Compensation (HLC), Automatic Gain Control (AGC) / Wide band dynamic range compression (WDRC), noise reduction and gain maximisation algorithms.

The included fitting and DSP pipelines provide a set of presets or programs tailored to specific listening situations like clear speech, natural sound or music. Jacoti HearingKit® enabled applications typically use its real-time audio processing engine which already handles the cascading of algorithms and provides a simple interface for processing audio frames. However, the Jacoti HearingKit® API also provides the means for independently activating or deactivating the different modules that uses the Jacoti HearingKit® Technology.

### REAL-TIME AUDIO PROCESSING (AUDIO ENGINE)



#### HEARINGKIT BASE API

##### User profile

###### Data Structures

- Audiogram
- Program parameters

##### Signal processing

###### Hearing Loss Compensation

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###### Noise Reduction

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###### Automatic Gain Control (AGC)

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###### Digital Gain Maximisation

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###### Limiter

## Key features

### Hearing Loss Compensation

The Jacoti HearingKit® API provides out-of-the-box low-latency (2-3 ms) Hearing Loss Compensation (HLC), Automatic Gain Control (AGC), Digital Gain Maximisation, Feedback Prevention, Noise Reduction and Signal Limiter. It supports different profiles depending on the listening situation (music, speech, natural sound, etc.).

### Hearing assessment

Jacoti HearingKit® features an adaptive Automatic DuoTone® air conduction procedure and is partially compliant with type IV audiometer requirements as per EN 60645-1 for Audiometers and ANSI S3.6.

### Real time

Jacoti HearingKit® has been designed for real-time applications. It provides a threaded real-time engine which processes audio at a deterministic time rate.

### Seamless integration

Jacoti HearingKit® is cross-platform, written in C and C++ and doesn't require third-party libraries. It includes bindings in Objective-C (iOS), Java (Android) and Python for easy integration.

## Main benefits

- Easy integration for faster deployment
- Predictable performance (such as latency) across multiple devices
- Streamlining the integration of hearing loss compensation and audio customisation to the individual needs of users on multiple platforms

## Products with Jacoti HearingKit®

### Jacoti Apps

Jacoti HearingKit® powers all Jacoti apps: Jacoti ListenApp, the world's first CE approved medical device standalone software hearing aid, Jacoti Hearing Center, the real life hearing self-test application, Jacoti Hearing Center Pro, a professional audiometer, and Jacoti Lola, the wireless audio communication solution for in-room situations.

### Jacoti Inside

Jacoti HearingKit® is part of Jacoti Inside for Qualcomm QCC51xx series: QCC514X, QCC512X. An optimised implementation for the QC5100 series is provided with minimal DSP and memory requirements.

Written in C/C++    Delivered as a self-contained static or dynamic library    Algorithmic Latency: 2-3 milliseconds

Cross-platform Tested on Linux, Android, Mac OS X and iOS    Frequency response: 10 Hz to 22 kHz

# Jacoti

HEARING WITHOUT BARRIERS

Jacoti's hearing solutions can be deeply embedded in consumer electronics devices such as headphones and earbuds. Our technology enhances audio experiences tailored to every customer's individual needs & preferences.

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