



## Technology Overview

# mQSynth™

polyphonic wavetable synthesizer



Mobile Phones



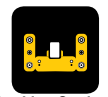
Music Players



Earphones



UMPCs



Docking Stations

### About mQSynth™

Today's mobile phones and UMPCs are highly integrated multi-media communications and entertainment devices with demanding audio needs requiring high performance algorithms and low resource requirements.

With **mQSynth™**, QSound Labs delivers a high-efficiency real-time MIDI synthesizer for polyphonic ringtones, game music and interactive sound events.

**mQSynth** offers the optimal audio solution for mobile devices, rendering polyphonic sequenced content including SMF, SP-MIDI, SMAF, MXMF and JSR135, with architectural efficiencies and performance levels that greatly surpass industry benchmarks.

### Feature Set Description

#### mQSynth™ Software MIDI Synthesizer

**mQSynth** plays polyphonic ringtone files, game music as well as interactive real-time sound events using digital wavetable instruments. **mQSynth** can produce as many simultaneous notes (polyphony) as platform resources allow, and is typically configured for 32, 64 or 128-note capability.

To meet the needs of a broad range of hardware, our standard wavetables start as small as 50KB in size, and range up to over 1MB. Wavetable customization can be provided if special emphasis is desired for certain types of instruments. **mQSynth** is compatible with the industry-standard DLS (.dls) wavetable format.

**mQSynth** also supports formats such as Mobile XMF (.mxmf) that include, in addition to the event list comprising the musical score, custom instrument definitions. Real-time interactivity is supported through the Java JSR-135 interactive synthesizer interface and the Java JSR-234 compatible implementation of QSound's **microQ** library.

**mQSynth's** innovative QSound Realtime Ringtone Remixer (QR3™) automatically re-authors non-optimized content on the fly to produce consistent, high-energy output, free of distortion.



QSound Labs, Inc., Partner  
CSR eXtension Program

### The mQSynth Competitive Edge

- Industry leading audio solution, ARM® optimised
- Replaces dedicated hardware music synthesizer
- Realistic wavetable instruments in a range of footprints.
- High-efficiency stereo processing
- Selectable, scalable modular components for easy implementation
- Proven track record and established brand recognition
- Multiformat support for all regions

## Feature Set Description continued

### QR3™ Realtime Ringtone Remixer

Performance-based ringtone files (i.e. in formats such as MIDI) are mainly composed of instructions to the synthesizer (polyringer), rather than digitized audio. Unfortunately, they are not always well-authored for mobile devices. Wide variability in effective signal levels is the result.

QR3 analyses and automatically modifies the performance data before it is rendered into audio by the synthesizer engine, significantly reducing variability. This is especially important for files authored at very high levels, that might otherwise saturate the output.

A second component of QR3 is dynamic range compression applied to the audio output of the synthesizer. This stage reduces variability and increases average signal level.

The net result of QR3 real-time optimization is clean, consistent, high-energy output. QR3 helps every ringtone – regardless of style, instrumentation or level – to punch through background noise.

## Technical Specifications & Implementation Data

Audio solutions by QSound Labs have been rigorously optimized with the participation of our major industry partners focusing on three critical requirements:

- Quality
- Processing performance
- Memory footprint.

You can expect at least 25 to 50 percent savings on MIPS and memory footprint when compared to competing solutions. For detailed technical information and implementation data, please contact a QSound Labs representative.

## Contact Us

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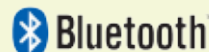
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MusiCore1™



### Single-Chip Bluetooth® Audio Solution

CSR's revolutionary MusiCore1 processor is the world's first fully featured single-chip stereo audio processor with integrated Bluetooth capability for mobile phones that allows handset manufacturers to eliminate the cost and space required for a separate audio CPU subsystem. MusiCore1 now includes mQSynth™, a powerful wavetable MIDI synthesizer\* from QSound Labs, providing a full spectrum of audio features from polyphonic ringtones to user interface sounds to multi-track game audio. This single-chip audio solution offers up to 100 hours of music playback, extended battery life and a significant overall cost savings.

The additional availability of QSound's mQFX 3D stereo enhancement solution for multimedia on the MusiCore1 platform provides an attractive, compelling technology and licensing proposition for any leading mobile OEM.

\*QR3 is currently not available on MusiCore1

