Qualcomm® MAPX Soundbar Platform

Comprehensive soundbar example design kit including software, tools and hardware design packages to offer a truly immersive listening experience.

Engineered to offer a truly immersive listening experience, MAPX platforms support OEMs in delivering leading edge audio performance with reduced development time.

A comprehensive example design kit based on the MAPX soundbar platform is available to help create soundbars that include HDMI inputs and output, HDMI CEC/ARC, SPDIF and wired analog inputs, NFC and *Bluetooth®* technology, extensive post processing algorithms, and wireless subwoofer connectivity.
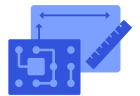
The Soundbar platform is centered around MAPX – a high performance, integrated audio System-on-Chip (SoC) family. The highest grade SoC in the MAPX family integrates three DSP cores with 2592 MIPS total, high quality audio inputs and outputs, multiple digital inputs and outputs, USB host, I2C, SPI and UART interfaces. MAPX is designed to drive the Bluetooth device over UART and covers the system, HDMI chip and LCD/VFD display control.

Options for the platform include the Qualcomm® AllPlay™ smart media platform, infrared or Bluetooth low energy remote controls, and a wireless subwoofer solution based on Qualcomm® Subwoofer Wireless Audio Transfer technology. This protocol and control mechanism helps the Bluetooth device in the soundbar to establish a low frequency wireless subwoofer link, while simultaneously streaming audio from a phone, to help avoid the need for an additional wireless transmitter module in the soundbar to transmit audio to the subwoofer.

Solution Highlights

Comprehensive example design kit for soundbars

The MAPX Soundbar example design kit includes software and hardware design packages, including schematics, bill of materials (BOM) and PCB layout files. Configuration files are also provided, together with a comprehensive tool set to help customers customize the design to their own needs.

Multiple audio post-processing and decoding options

Extensive choice of decoding and post-processing options help to offer a truly immersive listening experience; whether using Qualcomm® meloD™ audio processing suite or third party processing, such as Dolby, DTS and others.

Flexible platform options

Supports differentiation of target end-products by providing a choice of flexible platform option.

Supports the DTS Virtual:X post processing audio solution

DTS Virtual:X technology helps to support development of highly differentiated and cost effective soundbars that are designed to deliver superior audio experiences.

MAPX Soundbar Platform

Extensive choice of audio post-processing and decoding options from Qualcomm Technologies International Ltd. or third parties such as Dolby, DTS and others.

Features

PLATFORM

- AllPlay smart media platform extension*
- DTS Virtual:X technology
- HDMI inputs and output, HDMI CEC/ARC
- Support for IR & Bluetooth low energy remote controls
- LCD or VFD display & LED supported for UI
- Auto power-down (power saving)
- Wake-up from HDMI CEC, Bluetooth, NFC, analog and SPDIF inputs
- Wireless subwoofer auto-wake-up after bar is powered on
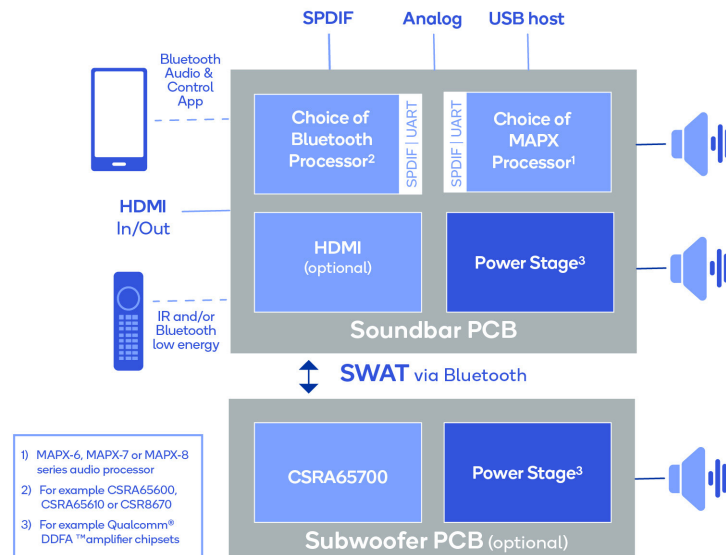- Voice prompts

AUDIO

- Variety of pre-programmed audio decoding and post processing modules available
- 32 bit, floating point audio DSP with up to 2592 MIPS total
- Multichannel, up to 192kHz internal audio processing
- Audio Delay (for Audio/Video sync)
- Coaxial and optical SPDIF input
- Superior performance ADCs and DACs embedded in audio SoC
- USB host (audio file playback and firmware update from an USB storage device)

BLUETOOTH/WI-FI

- A2DP (SBC, mp3, AAC, Qualcomm® aptX™ audio options)
- AVRCP
- Wireless subwoofer via Bluetooth (SWAT)
- GAIA over Bluetooth Low Energy
- Party Mode
- NFC initiated Bluetooth pairing
- Support for AllPlay smart media platform*

* available in Q2-2018 (subject to change)

MAPX Soundbar Principle Block Diagram

1) MAPX-6, MAPX-7 or MAPX-8 series audio processor
2) For example CSRA65600, CSRA65610 or CSR8670
3) For example Qualcomm® DDFA ™amplifier chipsets

Available Pre-programmed Audio Processing Modules

- meloD suite:
  - meloD MATRIX (Upmixer, Matrix Decoder)
  - meloD VOICE+ (Voice Enhancer)
  - meloD AROUND Pro (Virtualizer)
  - meloD BASS+ (Bass Enhancer)
  - meloD NIGHT+ (Night Listening Mode)
  - meloD VOLUME+ (Automatic Volume Leveler)
  - meloD SOUNDFIELD+ (Room Simulator)
- Audio Delay (for Audio/Video sync)
- Bass Management
- Tone Control (Bass/Treble/Loudness)
- Graphic Equalizer
- Parametric Equalizer
- Biquad Filter
- FIR Filter
- Multiband Dynamic Range Compressor
- Multiband Output Limiter
- Volume control & Master Volume control
- Multichannel Mixer blocks
- Speaker Downmix
- Signal Generator and Analyzer
- 2- and 3-Way Active Crossover
- Tab Delay
- Audio Playback & Firmware Update from USB
- FLAC decoding from USB
- WAV file playback from USB
- Playback Voice Prompts from SPI Flash

Available Only to Licensees of the Respective Technology

- Dolby TrueHD
- Dolby Digital
- Dolby Digital Plus
- Dolby Digital EX
- Dolby ProLogic IIx
- Dolby ProLogic II
- Dolby Volume
- Dolby Virtual Speaker
- Dolby Headphone
- DTS-HD (M6)
- DTS Digital Surround 96/24 (DTS Core Decoder)
- DTS Virtual:X
- DTS StudioSound II
- DTS:NEO6
- DTS TruVolume HD (Multichannel)
- DTS TruSurround HD and HD4
- WMA-9 decoding from USB
- mp3 decoding from USB
- AAC-LC, HE-AAC
- ZIRENE SOUND - Audio Enhancement by AM3D (via Qualcomm® eXtension program)
- HFFx - High Frequency Effect for restoring and enhancing audio bandwidth by Oxford Digital Limited (via Qualcomm eXtension program)

Qualcomm

CSRA65700, CSRA65610, CSRA65600, CSR8670, Qualcomm aptX and Qualcomm DDFA are products of are products of Qualcomm Technologies, Inc. and/or its subsidiaries. Qualcomm eXtension is a program of Qualcomm Technologies, Inc. and/or its subsidiaries.
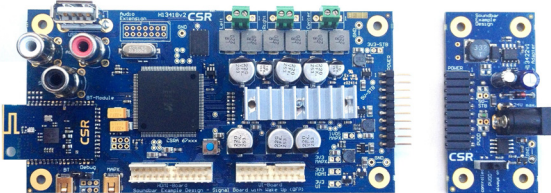
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Bluetooth®

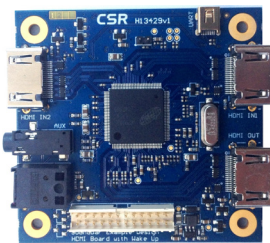Soundbar board with CSRA65610 module and power adapter board
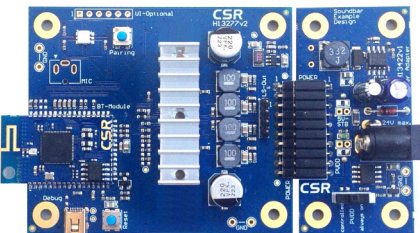
UI-Display board with NFC Tag

Infrared remote control

HDMI board

Subwoofer board with CSRA65700 module and power adapter board

Example Design Development Kit

- Soundbar main board with MAPX audio processor, CSRA65610 Bluetooth module
- Power adaptor board 24 V-to-5 V for soundbar main board
- Subwoofer main board with CSRA68xxx Bluetooth module assembled
- Power adaptor board 24 V-to-5 V for subwoofer main board
- HDMI board and 24-way ribbon cable
- UI-Display board and 20-way ribbon cable
- Infrared remote control
- 2x AAA batteries for the remote control
- 2x Power supplies, 24V
- USB 3-in-1 adaptor (Programmer with UART, I2C and SPI interfaces)
- 8-way interconnect cable
- USB cable (A to Mini-B)

Ordering Information

Product	Part Number
Soundbar Development Kit	DK-MRSB2.0-10234-1A

To learn more visit: qualcomm.com

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