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Mailing Address:
400 W. Cesar Chavez
Austin, TX 78701

CP2114 USB AUDIO TO I2S DIGITAL AUDIO BRIDGE QUICK-START GUIDE

The CP2114 Evaluation kits are stand-alone evaluation platforms with easy access to all signals on the device. All evaluation kits come with a CP2114 evaluation board, USB cable, and RS-232 cable. Some Evaluation Kits come with a CODEC/DAC daughter card to allow the product to play audio out-of-the-box.

- CP2114-WM8523 Evaluation Kit (CP2114-WM8523EK)**

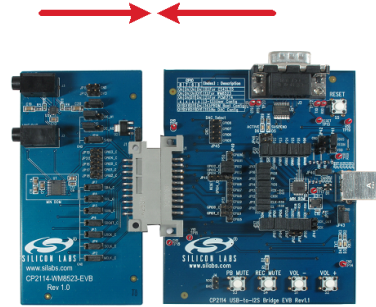
 - CP2114 evaluation board
 - Daughter card with Cirrus Logic WM8523 DAC
 - Ear bud headphones
 - USB cable
 - RS-232 cable
- CP2114-CS42L55 Evaluation Kit (CP2114-CS42L55EK)**

 - CP2114 evaluation board
 - Daughter card with Cirrus Logic CS42L55 CODEC
 - Ear bud headphones
 - Audio cable: 3.5 mm male-to-male
 - USB cable
 - RS-232 cable
- CP2114-PCM1774 Evaluation Kit (CP2114-PCM1774EK)**

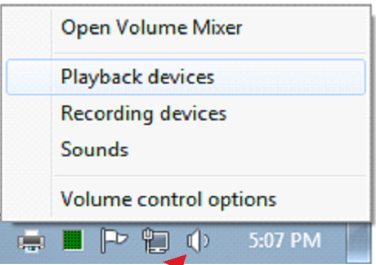
 - CP2114 evaluation board
 - Daughter card with Texas Instruments PCM1774 DAC
 - Ear bud headphones
 - USB cable
 - RS-232 cable

Windows—Audio Output

1 Connect the CP2114 evaluation board to the daughter card.

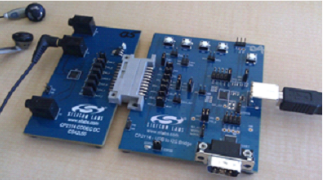


4 Right-click on the “Speakers” icon in the Windows Systems Tray and left-click “Playback devices”.

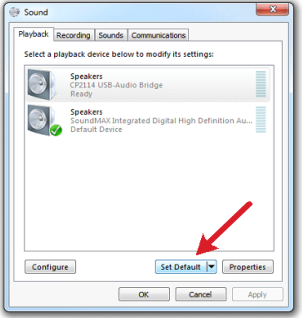


2 Connect headphones and/or powered speakers to the appropriate daughtercard connector:

HP OUT: headphone output
LINE OUT: line output (to powered speakers)
HP/LINE OUT (WM8523 daughtercard only): common connector for headphone or line output.




5 Select “CP2114 USB-Audio Bridge”, click “Set Default” button. Next, verify the CP2114 is checked as the default playback device.



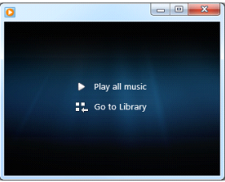
3 Connect the USB cable to the CP2114 evaluation board (J2). Next, connect the other end of the USB cable directly to the host computer.

Note: Do not use a USB hub.



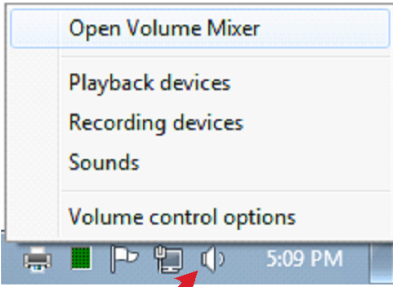
6 Play audio from the host computer using any media player application and verify high-quality audio from the headphones or powered speakers attached to the daughter card.

The “Windows Volume and Mute” section describes how to control playback mute and volume.



Windows—Volume and Mute

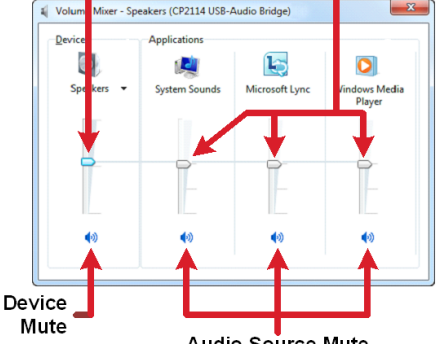
1 Right-click on the “Speakers” icon and left-click “Open Volume Mixer”.



2 Set volume and mute. Volume and mute can be controlled in two ways, and both methods are supported by the CP2114:

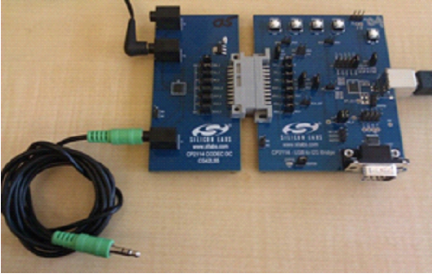
1. Device Volume and Mute: this control sends USB volume and mute control messages to the device. Generally, this will adjust the volume control of the DAC in hardware using I²C writes.

2. Audio Source Volume and Mute: these controls scale the audio signal sent over USB and can be set individually. The CP2114 volume can be set with these controls.



Windows—Audio Input*

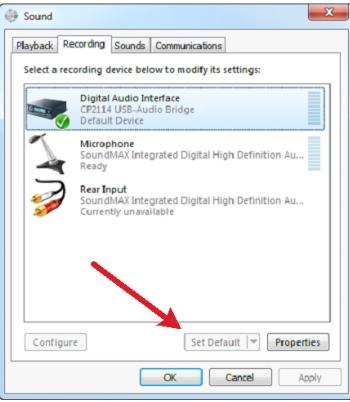
1 Connect a powered microphone or line-level analog audio source to the analog In (AIN) connector (P2).



2 Right-click on the ‘Speakers’ icon and left-click on “Recording devices”.

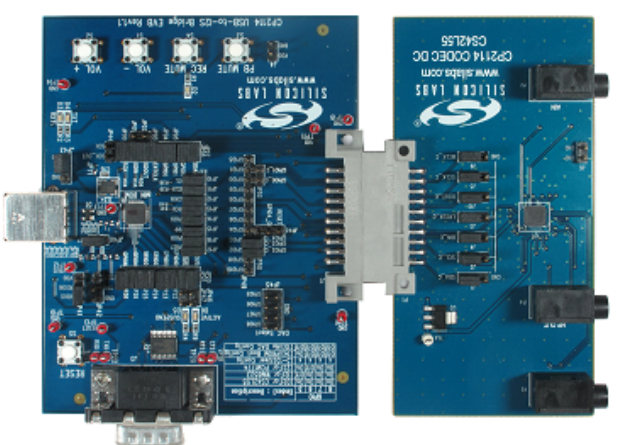
Open a recorder application to record the audio input or listen in real time by selecting “Properties” and checking the “Listen to this device” button. Select the CP2114 from the “Playback through this device” drop-down to select full loop testing.

*Note: Audio Input is supported only on the CS42L55 daughtercard, not the WM8523 and PCM1774 daughtercards. Although the PCM1774 daughtercard has an ANALOG IN jack, this audio is not digitized and sent to the host because the PCM1774 is a DAC-only device. The PCM1774 has the ability to mix the ANALOG IN signal with the analog output produced by its DAC.



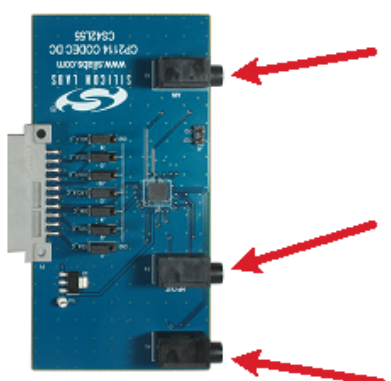
1

Connect the CP2114 evaluation board to the daughter card.



2

Connect the analog outjack (P3) to powered speakers or the headphone output (P4) to headphones. Connect a sound source to the analog input jack (P2).



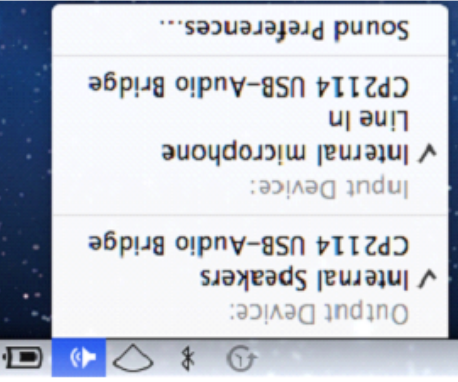
3

Connect one end of the USB cable to the CP2114 evaluation board and the other end to the Mac.



4

Hold Option and click the speaker icon. Select the CP2114 as the sound output and the input device for the Mac. You can now play (audio out) or record (audio in) through the CP2114.




5

There are two methods to adjust volume:

Mac TaskBar. This sends USB Audio Class "Set" volume messages over USB to the CP2114. The CP2114 forwards these volume adjustments to the DAC via I²C and the DAC adjusts the gain. Currently, volume adjustments are sent to both the DAC headphone output and the line-out output.

iTunes Volume: This causes the Mac to directly scale the audio samples that are sent over USB. It does not send USB Audio class volume messages. This volume affects both headphone and line-out volumes.



1

Connect the CP2114 Motherboard and Daughtercard together.

2

Connect the LINE OUT jack (P3) to powered speakers and/or the HP OUT jack (P4) to headphones.

3

Connect an analog audio source to the AIN jack (P2). The audio source can be an iPod, iPhone, MP3 player, CD player, stereo microphone, etc.

4

Connect a Lightning-to-USB Camera Adapter to the CP2114 EVB and iPad. It is not necessary to manually select the CP2114 as the playback device; whenever a CP2114 is connected to the iPad, the audio data will be automatically routed to the CP2114.

5

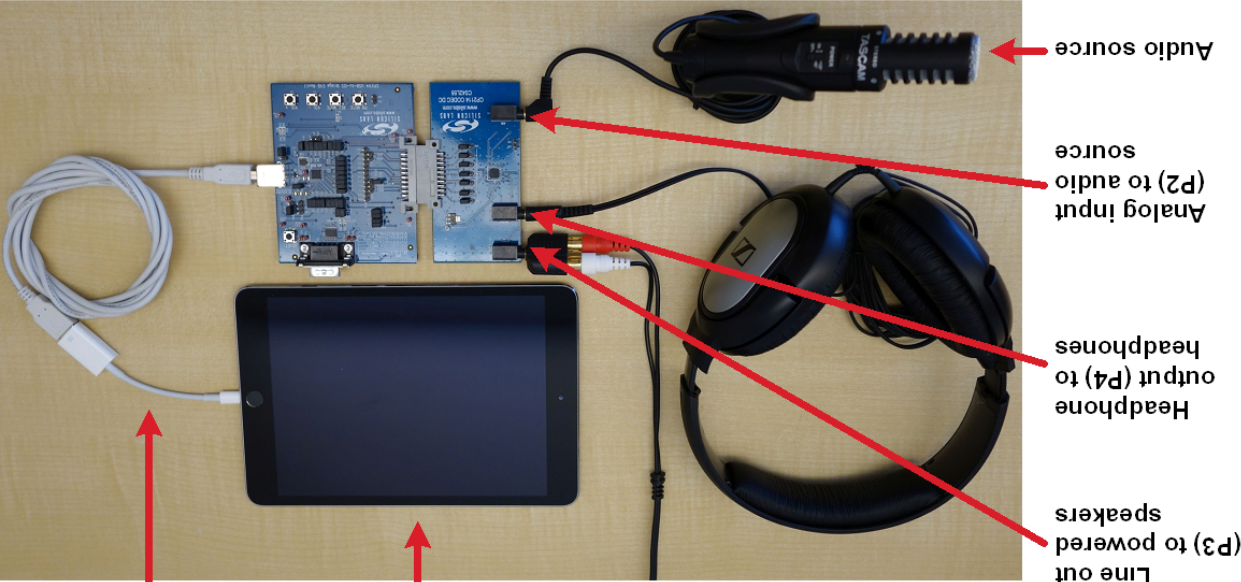
To demonstrate CP2114 audio output, open an iPad application that plays audio files (e.g. iPod, iTunes, etc.) and play an audio file. The audio should be present on the headphone HP OUT (headphone) and LINE OUT jacks.

6

Adjusting the App volume slider sends USB Audio Class "Set" volume messages over USB to the CP2114. The CP2114 forwards these volume adjustments to the DAC via I²C and the DAC adjusts the gain.

7

To demonstrate CP2114 audio input, open an iPad application that records audio files (e.g. GarageBand, QuickVoice, etc.). Begin recording, then play audio on the audio source.



Line out (P3) to powered speakers

Headphone output (P4) to headphones

Analog input source

Audio source

iPad

Lightning-to-USB Camera Adapter

Additional Documentation

- **AN721**, CP210x/CP211x Device Customization Guide: This application note describes how to use the configuration software to configure the USB parameters on the CP21xx devices.
 - **AN433**, CP2110/4 HID to UART API Specification: This application note describes the API of the interface libraries provided by Silicon Labs.
 - **AN434**, CP2110/4 Interface Specification: This application note describes the HID reports supported by the CP2110/4 and the configurable parameters.
- Application Notes
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