

Evaluating a 4 channel PurePath™ Wireless Audio Base Station

By Kjetil Holstad

Keywords

CC85XX
CC8530
CC85XXDK
PurePath Wireless

TLV320AIC34
TLV320AIC34EVM-K
Wireless Audio

1 Introduction

This design note shows how you can evaluate a 4 channel input wireless audio base station using the CC85XXDK [1] together with the TLV320AIC34EVM-K [2]. Both of these development kits need to be used to fully evaluate a system consisting of more than two audio channels. Project collateral discussed in this application report can be downloaded from the following URL: <http://www.ti.com/lit/zip/SWRA383>.

The receiving end can be evaluated using either CC85XXDK or CC85XXDK-HEADSET.

The 2.4 GHz CC8530 radio frequency (RF) system-on-chip transmits uncompressed wireless audio over a robust RF link, and supports digital streaming of high quality audio.

The CC8530 have multichannel audio streaming capability (See Figure 1 and 2):

- Up to four headphones receiving either stereo A or stereo B audio from the same base station
- Four speakers receiving independent audio streams from wireless base station

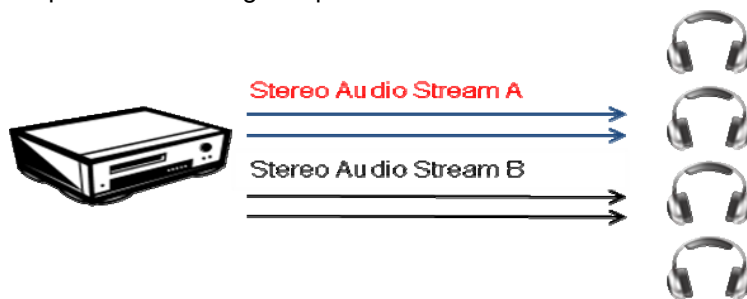


Figure 1. 4 audio channels to up to 4 headphones



Figure 2. 4.0 speaker systems

Table of Contents

KEYWORDS	1
1 INTRODUCTION	1
2 ABBREVIATIONS	2
3 CONNECTING THE EVALUATION BOARDS	3
3.1 PUREPATH WIRELESS EB RESISTOR AND JUMPER SETTINGS	3
3.2 TLV320AIC34EVM JUMPER SETTINGS AND AUDIO INPUTS	4
A 4 CHANNEL BASE STATION IN PUREPATH WIRELESS CONFIGURATOR	5
4 5	
5 REFERENCES	5
GENERAL INFORMATION	6
5.1 DOCUMENT HISTORY.....	6

2 Abbreviations

RF	Radio Frequency
EM	Evaluation module
ISM	Industrial, Scientific, Medical

3 Connecting The Evaluation Boards.

The PurePath Wireless EB in the CC85XXDK was made so that one can directly mount audio codec evaluation modules on top for easy integration.

For the TLV320AIC34EVM-K some care and considerations need to be taken care of for this to work. Even though this document describes how to use the combination to make a 4 channel input base station, a similar approach can be used to generate a bi-directional audio base station or a 4 channel output base station.

The jumper settings as described in the next two chapters are what is different from the default out-of-the-box configuration for the two respective boards.

3.1 PurePath Wireless EB Resistor and Jumper Settings.

There is room for a 0 ohm resistor close to pin 15 on P5. If possible, this resistor should be mounted and AD2 pin used as the 2nd I2S data out pin on the CC8530.

Alternatively one can strap a cable from Pin14 - J17A on the AIC34EVM to the I2S_AD2 pin on P18 on the PurePath Wireless EB.

There is a crude workaround where AD1 is used instead. This will work nicely for the two applications as outlined in Figure 1 and Figure 2, but will create problems if bi-directional audio is to be evaluated at a later stage as one will need to short DOUTB with DIN A on the AIC34EVM. When using 4 analog inputs on the AIC34, the digital inputs are not used.

All jumpers on P15 should be removed except the following:

- 5V0 & 5V0_AIC
- 3V3_IO & IOVDD_AIC
- GIO2_RESET & RESET

NOTE: Older versions of the PurePath Wireless Audio EB might come with one or both 0 ohms resistor mounted (pin 20 on P4 and pin 15 on P5). If this is the case, please ensure that the resistor at pin 20 on P4 is removed and the resistor at pin 15 on P5 remains mounted.

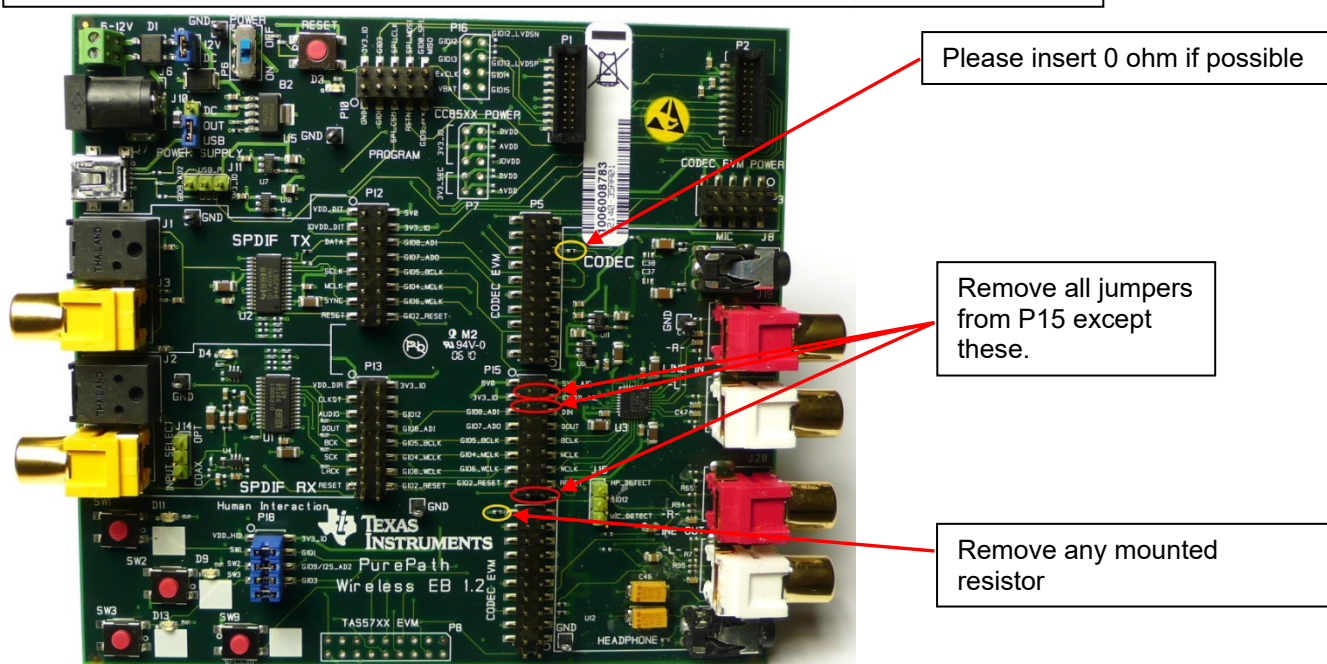


Figure 3. PurePath Wireless EB connections

3.2 TLV320AIC34EVM Jumper Settings and Audio Inputs

For audio inputs the following jumpers / pins must be used:

Audio Channel 1 / Stereo A Left	J1
Audio Channel 2 / Stereo A Right	J2
Audio Channel 3 / Stereo B Left	LINE1LM_B and LINE1LP_B on J13
Audio Channel 4 / Stereo B Right	LINE1RM_B and LINE1RP_B on J13

JMP22 has to be set to 3.3V.

The following jumpers need to be mounted:

- JMP9
- JMP16
- JMP19
- JMP20
- JMP1 -> over position 2&3

For J17A the following pins should be jumped together:

- 3 & 5 (BCLKA & BCLKB)
- 7 & 9 (WCLKA & WCLKB)
- 17 & 19 (MCLKA & MCLKB)
- Depending on the 0 ohm configuration in chapter 3.1 pin 14 should be either set to pin 15 (AD2 on CC8530) or pin 11 (AD1 on CC8530)

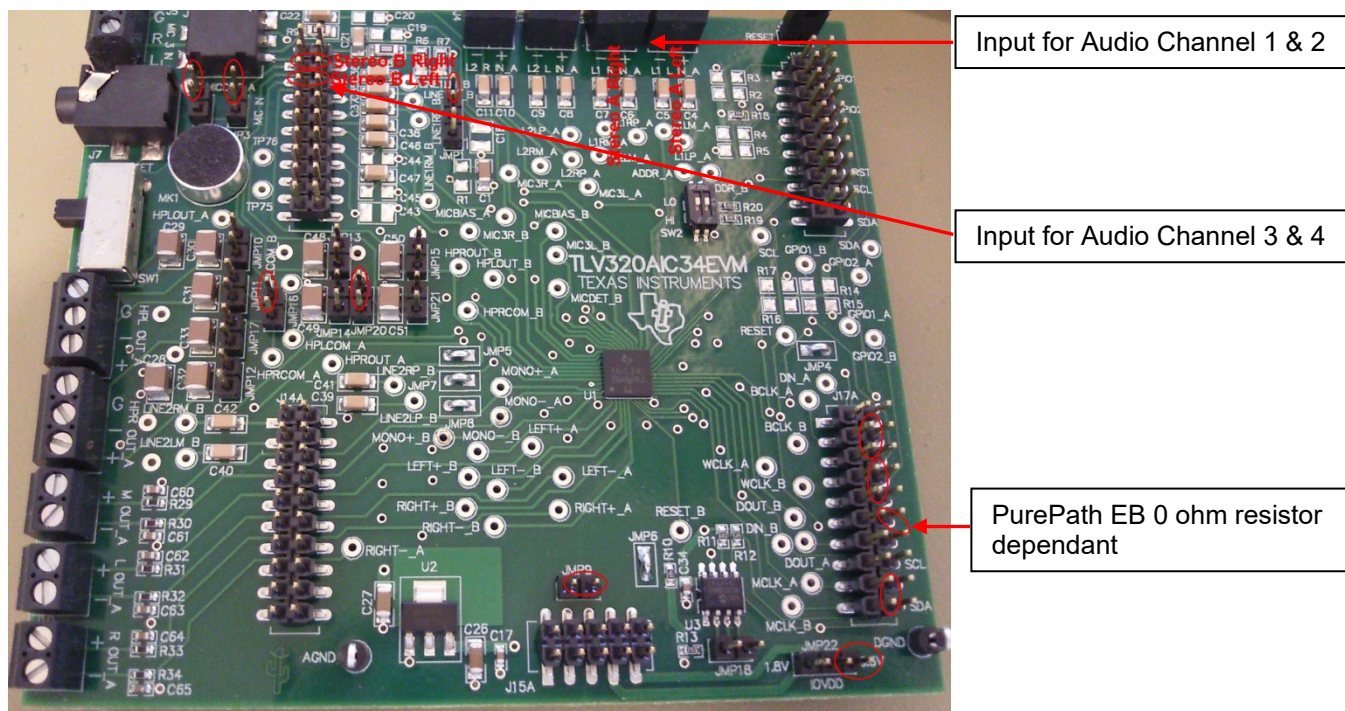


Figure 4. AIC34EVM jumper settings and connections

4 A 4 Channel Base station in PurePath Wireless Configurator

To demo the above set-up, a PurePath Wireless Configurator project is supplied in addition to this design note. The project consists of a master based on the above described set-up and 4 slaves using the CC85xx Headset board, each consuming a mono channel. Thus, the project is similar to the set-up shown in figure 2. The CC85xx headset boards are part of the CC85xxDK-HEADSET kit [3].

5 References

- [1] CC85XXDK <http://focus.ti.com/docs/toolsw/folders/print/cc85xxdk.html>
- [2] TLV320AIC34EVM-K <http://focus.ti.com/docs/toolsw/folders/print/tlv320aic34evm-k.html>
- [3] CC85xxDK-HEADSET <http://www.ti.com/tool/cc85xxdk-headset>

General Information

5.1 Document History

Revision	Date	Description/Changes
SWRA383	2011.10.10	Initial release.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2019, Texas Instruments Incorporated