Software Test Sheet

MSc in Digital Systems Engineering
Department of Electronics
University of York

Group Project

Contents

1 Test #2

2 Tester name: Simone Ledda

3 Test date start: 08-06

4 Test date finish: 12-06

5 UUT typology (~~VHDL entity / custom IP~~ / subsystem)

6 UUT name: ADAU1761 audio codec

7 Software/driver functionality description

8 Objective of test

1. Buffer the input to the output headphones
2. Tune gains and noise filtering for better audio quality

The black-box testing strategy is used for this test.

9 Test results

The hardware architecture used for this test is the same described in the previous report. The main changes happened in the C library for the ADAU1761. It was found that the samples from the ADC and those to the DAC were routed towards the internal DSP of the codec even though the DSP memory was not programmed nor used at all; these two streams were diverted straight to and from the serial port leaving the DSP off since it's not required for this application.

The audio has been finely tuned and the gains adjusted to avoid distortion in the output but at the same time provide the user with a high volume sound in case needed, it will then be limited by the software.

At this point, the testing became very tricky because 2 times out of 10, when programming the FPGA in debug mode it was possible to hear the music in the output at a feeble volume, the other 8 times a very loud noise would cover up everything hearable. To sort out this new issue it was chosen to seek help on some example files on the internet. Apparently, there's an order that needs to be followed when setting up the codec's registers such as headphones path should be set before ADC and DAC enabling. Unfortunately, the ADAU1761 doesn't provide any saying about this order.

Upon the new configuration, it was possible to hear the right music every time, yet at startup, the sound would still be low in volume, but when replugging the audio jack then the complete volume height would be reached. To sort out this detail it was chosen to configure the jack detection register that mutes the output for a brief time when a jack is plugged in, and it sorted out this issue.

Due to the lack of available instruments to measure these signals other than our ears, it was chosen to save this configuration and eventually improve it to clean random noise in later stages of the development, since the audio quality is very good at the moment.

10 Observations

Some cyclic random noise can still be heard and an investigation is in progress to solve it, yet it can be heard only when no song is being played and the volume is at max.

11 Grade (pass/fail):

ADAU 1761 codec settings – PASS

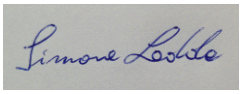
12 Software manager approval signature

Recoverable Signature

X Gavin Johnston

Gavin Johnston
Software Manager
Signed by: 1007ad75-1394-4c98-a3c5-949a4bae4391

Recoverable Signature

X 

Simone Ledda
Test Manager
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