Software Test Sheet

MSc in Digital Systems Engineering
Department of Electronics
University of York

Group Project

Contents

1 Test #1

2 Tester name: Simone Ledda

3 Test date start: 22-06

4 Test date finish: 07-07

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

6 UUT name: Integration stage 0

7 Software/driver functionality description

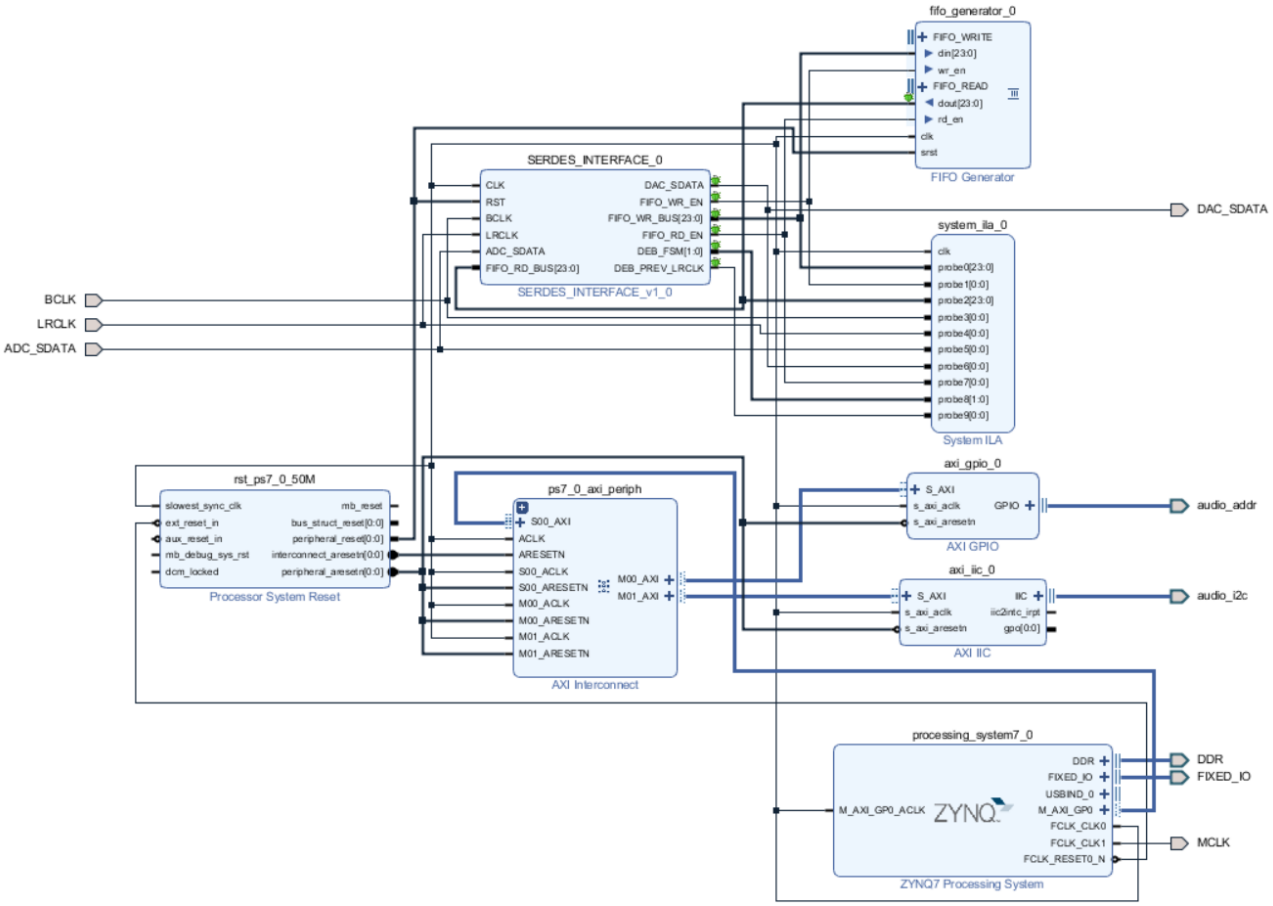
ADAU1761 driver library allows to set registers in the audio codec via I2C bus. It's used to configure and initialize the audio codec IC.

8 Objective of test

1. Test compatibility of the library with the SERDES interface
2. Ensure SERDES interface's behaviour is correct against specs
3. Check whether noise is introduced or some error occurs

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

9 Test results



HW Block design of the integration 0 stage

The HW block design above features the SERDES interface (TOP_Level entity) that acts as serializer and deserializer, it uses a 16x24 bit FIFO register to store the decoded sample and to encode the next one. It was mandatory to plug in a System ILA block to have a complete view of what digital signals are flowing in the architecture and whether the SERDES is behaving properly, but this will be object of a HW test report.

The bitstream was exported and the drivers imported in the SDK for testing.
The testing format is the same in every design, the main function initializes the audio codec, then the PS is stalled in a while loop, in the meantime every audio signal in the AUX LINE IN jack gets converted by the codec's ADCs and sent to the PL where the SERDES parallelizes it, saves it into the FIFO, then reads it back, serializes it and sends it back to the codec. Here the DACs convert the digital stream in music hearable through the HP+MIC jack.

Final adjustments to the ADAU1761 library happened on input and output gain to maximize the volume hearable without clipping. It was observed that according to what kind of headphones are used clipping may happen. Good quality headphones run smoothly with the latest drivers configuration, but it may be wise to define a low quality headphone initialization function, as well as power saving settings management of the ADAU settings.

10 Observations

The board was tested together with different driving devices such as mobile phones and laptops. Even though mobile phones have smaller driving strengths the difference can barely be heard, the audio quality is clean by any noise hearable.

11 Grade (pass/fail):

ADAU1761 library compatibility with Integration 0 HW Block design – PASS

12 Software manager approval signature

Recoverable Signature

X Gavin Johnston

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

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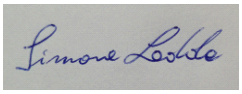
X 

Simone Ledda
Test Manager
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