Abstract

The topic of the thesis is to design a digital audio bit stream analyzer for the Lightware Ltd., because there was a claim to improve an own device. To solve the problem, I had to use the digital signal processor (DSP) of type ADSP-21489 from Analog Devices. The analyzer should have both digital and analog audio interfaces.

For the design, it was necessary to understand the relevant digital audio standards. After getting acquainted with the selected DSP, I have designed the functional block-diagram of the analyzer. To realise the parts of the block-diagram, I had to specify the features of the interfaces according to the standards, and I also had to choose the most suitable integrated circuits for the project. To demonstrate the proper functionality of some parts, I made simulations with the Tina circuit simulator software. I designed the whole schematic with the Altium Designer software which one I had to learn during my work. From the schematic, I made the printed circuit board with Altium Designer too. In this task, I put special emphasis on establishing appropriate groundings, because there are both analog and digital devices in the system, and improper grounding may be the sourece of electrical noises.