



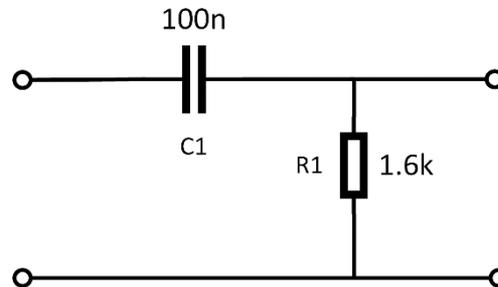
Advanced VLSI Design (Module 24151)

FPGA-Design Phase 3

Alexander Schumann

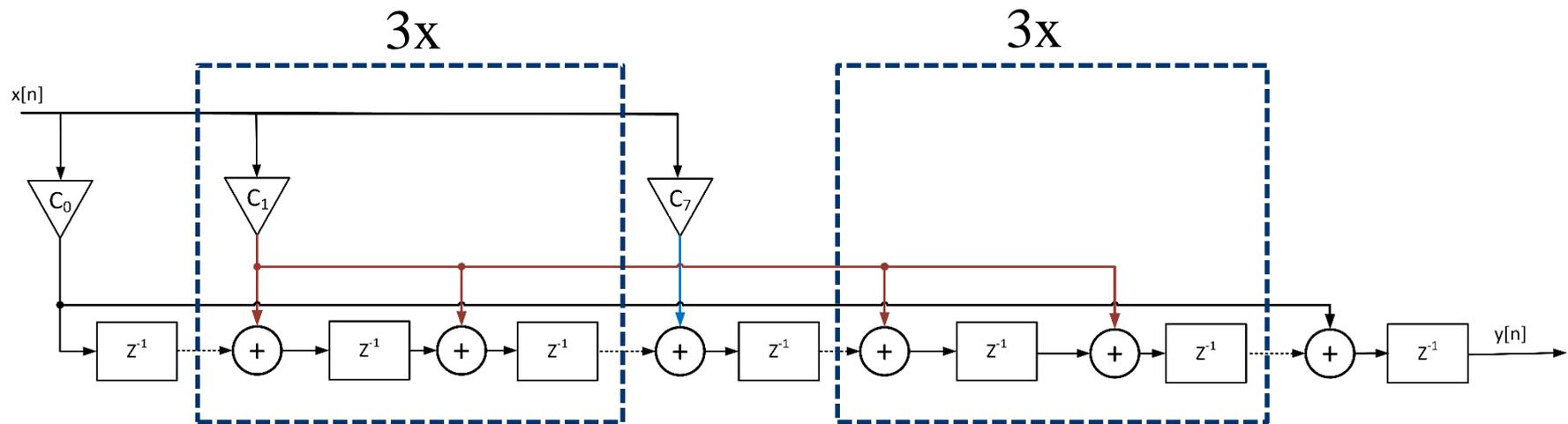
Introduction

Task: Design an Audio - Highpass

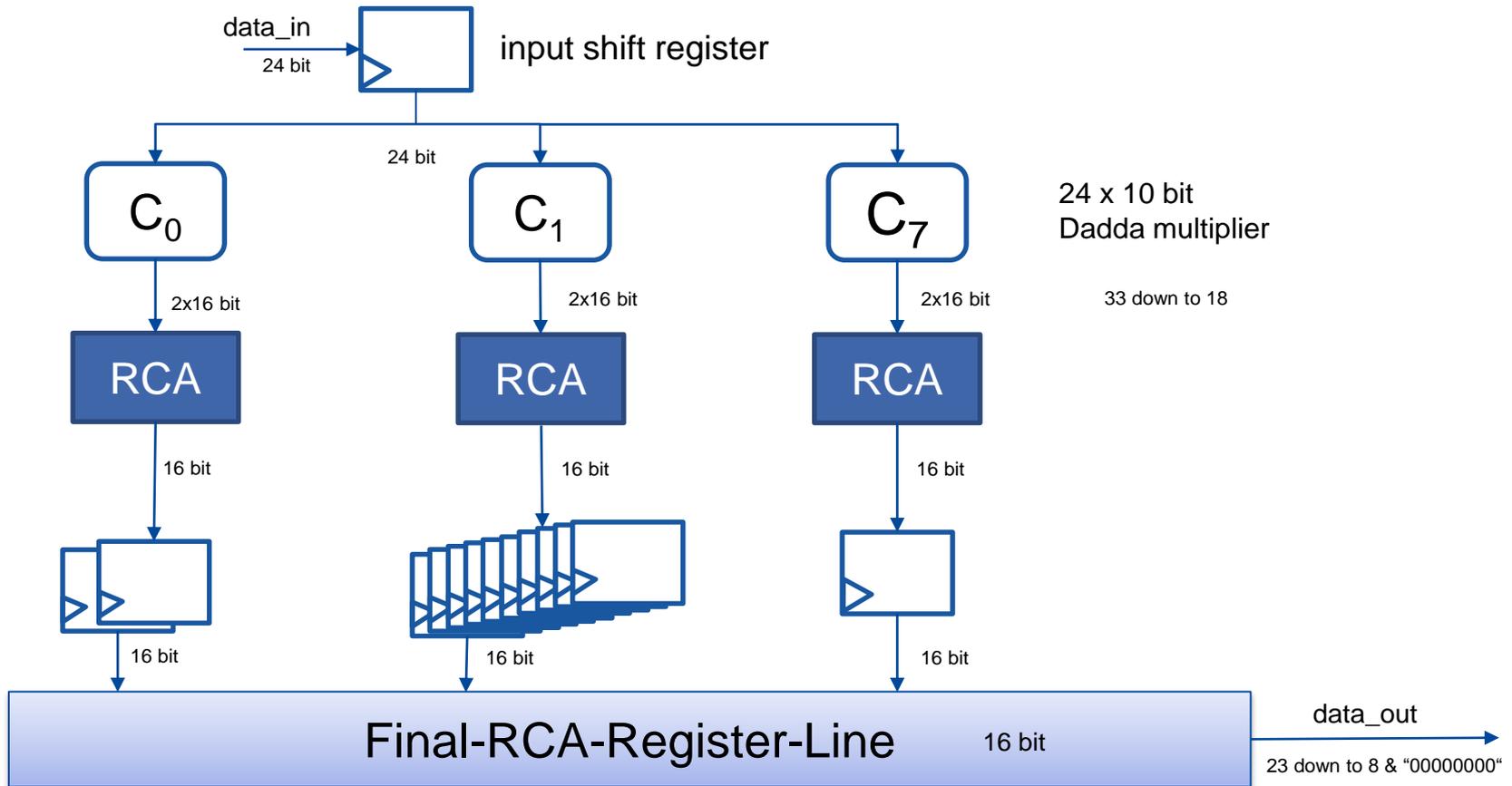


FIR Structure

- Direct Form II
- N14 - FIR-filter with term sharing
- 3 different 10-bit-coefficients



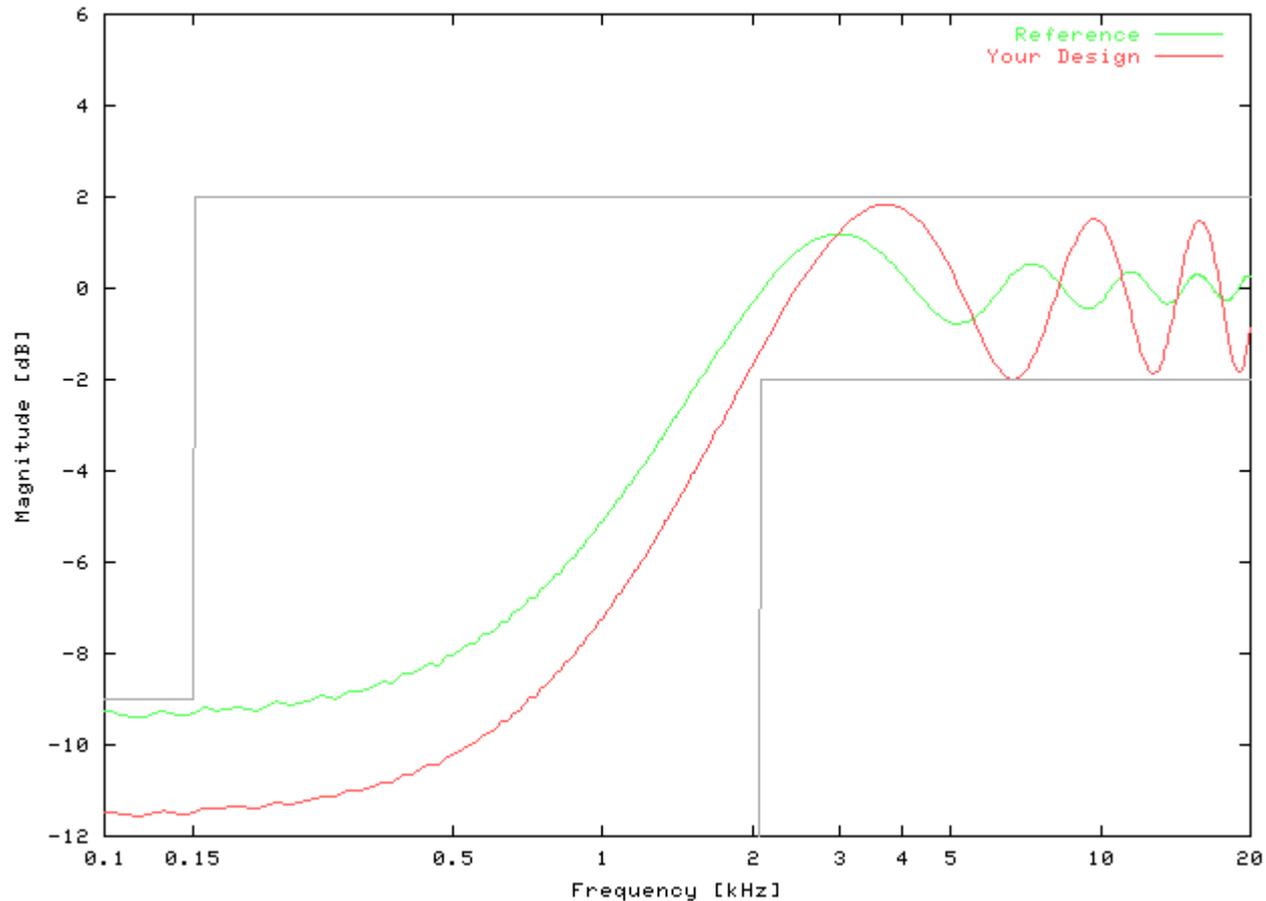
Code - Structure



Results

	Values
Frequency (Implementation)	149.8 MHz
Area A (# of LUT / FFs)	263 / 281
Pipeline Stages	3
Attenuation	11.29880 dB
Metric	$7.01836 \cdot 10^{-8}$

Frequency Response



Overview

	Phase 1	Phase 2	Phase 3
Frequency (Implementation)	52.23 MHz	104.37 MHz	149.8 MHz
Area A (# of LUT-FF pairs)	9602	2455	544
Pipeline Stages	2	3	3
Attenuation	9.315158 dB	9.315158 dB	11.29880 dB
Metric	$1.0522 \cdot 10^{-11}$	$6.29558 \cdot 10^{-10}$	$7.01836 \cdot 10^{-8}$



Thank you for your attention!