

Selected Topics in VLSI Design (Module 24513)

course and contest

results of phase 3
Final FPGA-Design

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Target

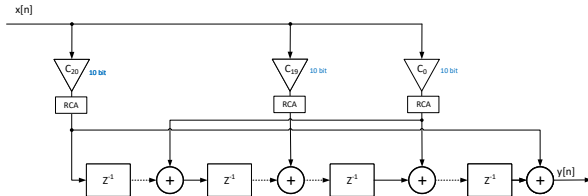
- a better design, in terms of the metric

Further Enhancements

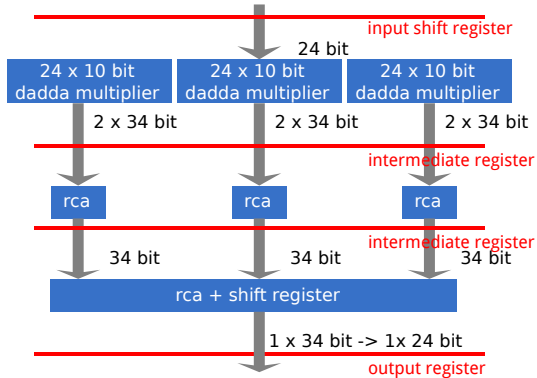
- N14-FIR-filter
- final adder is a 40 bit ripple carry adder → slow

Direct Form II Enhancement

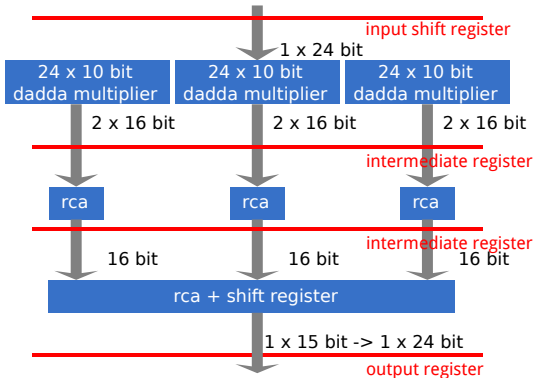
- N14 - FIR-filter with 10-bit-coefficients
- 3 different coefficients
- term sharing



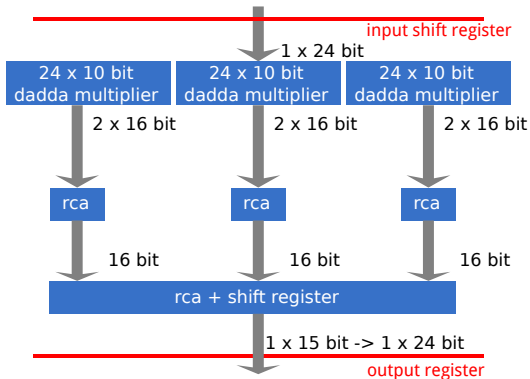
Direct Form II Enhancement



Direct Form II Enhancement - optimized



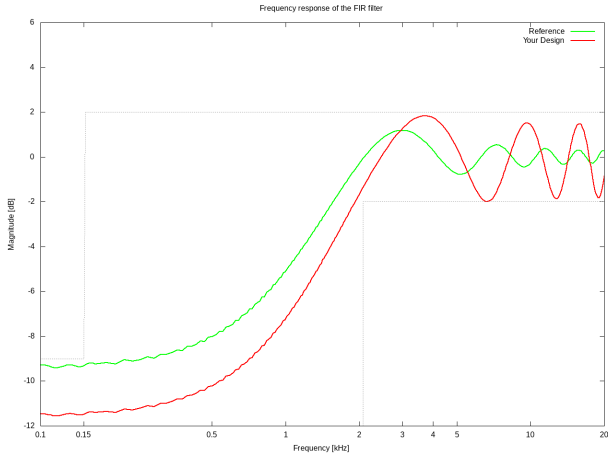
The Overall Structure



The Results

frequency f	104.37 MHz	122.61 MHz
area A (# of pairs)	2458	533
attenuation	-9.176983	-11.29828
# pipeline stages	3	2
metric	$6.1795136 \cdot 10^{-10}$	$7.4615784 \cdot 10^{-8}$

The Results



The Results

frequency f	122.61 MHz
area A (# of pairs)	533
attenuation	-11.29828
# pipeline stages	2
metric	$7.4615784 \cdot 10^{-8}$
noise	$2.307210 \cdot 10^{11}$

Thank you for your attention!

