

DAT094

Introduction to Electronic System Design

Files in Lab4

total_system_MAC_gen_trans_min_12_17

Lab 4

Total_system_MAC_gen_trans_min_12_17

A total filter system with ADC and DAC using MAC_gen_min_12_17 FIR filter with 12 bits signal, 12 bits coefficients, 17 taps. A lowpass pass filter with a cutoff frequency of 12 kHz

Files

FIR_tap_clk.vhdl – component in the design (from lab 3/MAC_gen_trans_min)

MAC_gen_trans_min_full_12_17.vhdl – the total design including ADC and DAC

MAC_gen_trans_min_12_17.vhdl – the filter design

(from lab 4/MAC_gen_trans_min_12_17)

convert_data_format – converts between signed and unsigned vectors (from lab 1)

sample_clock – generates the sampling clock signal (from Common files)

SPI_clock – sets the clock frequency for the SPI communication (from Common files)

SPI_AD – reads data from the ADC using SPI interface (from Common files)

SPI_DA – sends output data to the DAC (from Common files)

MAC_gen_trans_min_12_17_package.vhdl – gives coefficients for the filter and input signals and expected results for the simulation (from packages)

vec2str_package.vhdl – converts STD_LOGIC and STD_LOGIC_VECTOR to text for printing (from packages)

system_frequencies_package.vhdl – sets the system frequency, the sample frequency and the SPI clock frequency (from



packages)