

Filter_S21_vs_f_fo

Where To Find This Example

AWR Version 15

Download Project

[Understanding AWR .emz Files](#)

AWR Version 14

Download Project

[Understanding AWR .emz Files](#)

Design Notes

Filter s21 vs f-fo script.emp

Whereas Microwave Office plots frequency f as the x-axis, in some applications, like filters, it may be required to plot a response as a function of f/fo on the x-axis. This project plots S21 as a function of normalized frequency f/fo by using output equations for a simple behavioral filter.

Overview

In order to plot S21 with a modified x-axis of f/fo , this project calculates f/fo x-axis points with output equations. Output equation pulls out the S21 data from the graph, pulls the simulation frequencies using the swpvals variable, sets $fo=7\text{GHz}$, and calculates f/fo . The graph "S21 vs norm f" uses an output equation to plot the S21 against the new x-axis.

Output Equations

The variable `_FREQ` makes the simulation frequency available as a variable withing Microwave Office. In the output equations `_FREQ` is divided by the chosen center frequency for the example, fo , in order to generate the normalized frequency "fnew" for the new x-axis. The S-parameter data is captured into a variable by the equation statement `S21 = Schematic 1: DB(|S[2,1]|)`.

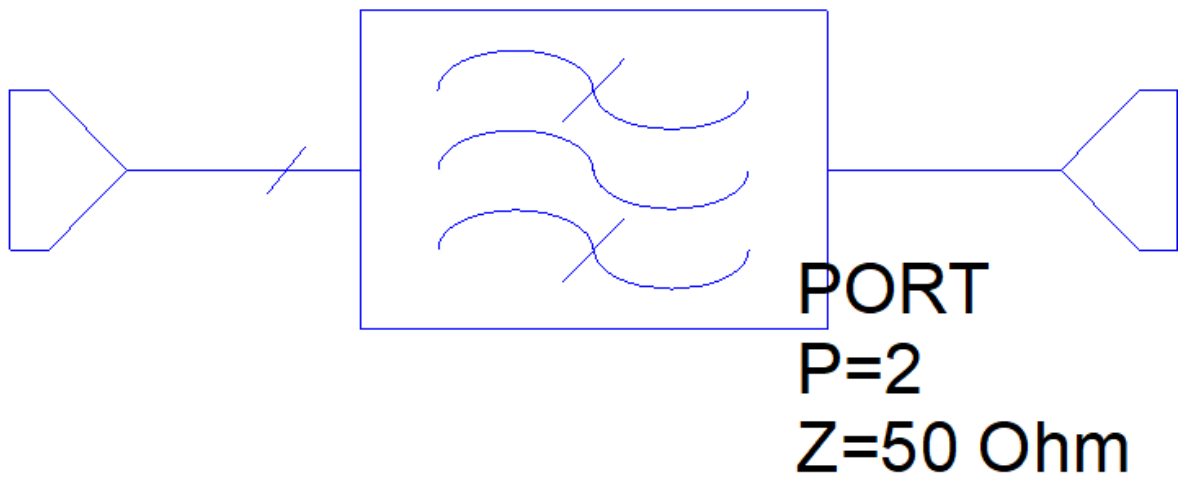
Graph on New X-Axis

The graph "S21 vs norm f" plots S21 on the "fnew" axis of f/fo . The measurement uses an output equation result

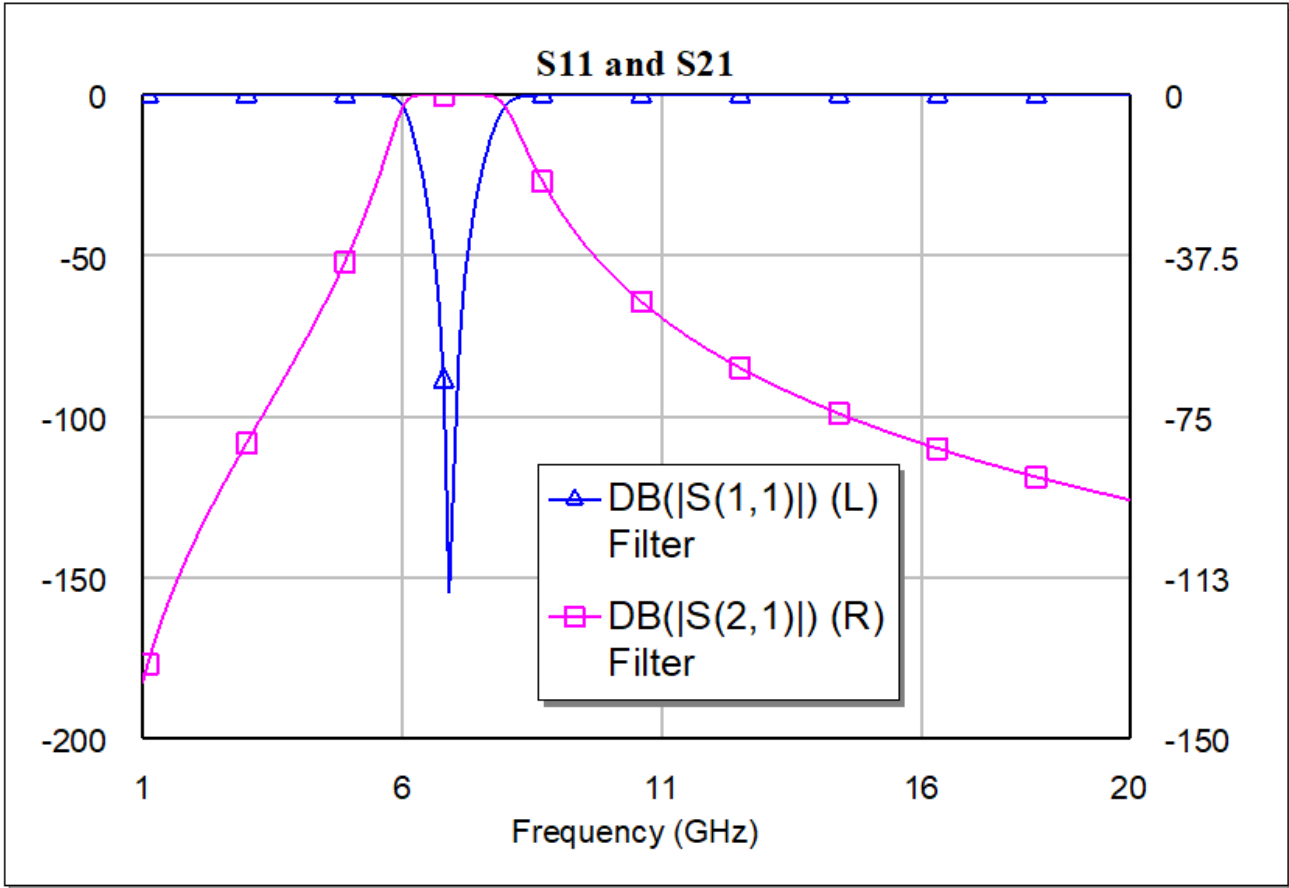
Schematic - Filter

PORT
P=1
Z=50 Ohm

BPFB
ID=BPFB1
N=5
FP1=6 GHz
FP2=8 GHz



Graph - S11 and S21



Graph - S21 vs norm f

