Design Project 1 Report Template

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| --- | --- | --- | --- |
| Parameter | Analytical | Simulated | Measured |
| Pass Band Edge  (defined as exceeding 1dB ripple) |  |  |  |
| Stop Band Start  (defined @20dB of rejection) |  |  |  |
| Insertion Loss |  |  |  |
| In-Band Ripple |  |  |  |

Filter Type (e.g. Butterworth, Chebyshev I, Elliptic, etc.) :

Filter Order:

Picture of your assembled filter:

Schematic of your filter (must be legible, ltSpice exports often won’t be, so consider redrawing):

Calculations & brief (1 paragraph) discussion that show each of the following:

* Your in-band ripple is achievable by your design
* Your stop-band rejection is achievable by your design
* How you related your pass-band edge to component values

Simulations and measurements of the magnitude, phase and Smith Chart for S11 of your design. Include two sets of figures, one zoomed in on the pass band and another at wider zoom.

Simulations and measurements of the magnitude, phase and Smith Chart for S21 of your design. Include two sets of figures, one zoomed in on the pass band and another at wider zoom. In the pass-band magnitude figure, annotate the insertion loss, in-band ripple and pass-band edge. In the wide figure annotate the pass-band edge, the stop-band start and the stop-band rejection.

Discussion of discrepancies between analytical, simulated and measured results. Quantitatively justify differences between them, including any modifications you made to your models. You may (and probably should) distribute this discussion among earlier sections of the template as results indicate.

Calculation showing power delivered to a 50 Ohm if your filter were driven by a 1Vpp, 0VDC offset, 50 MHz sine wave from a voltage source w/ 50 Ohm output impedance.