



CALIFORNIA STATE UNIVERSITY
FULLERTON

EGEE 435
Project 2 Report

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1. Calculate the device's dimension

Using the LineCalc tool in ADS, we get the following results

For $Z_0 = 50$ ohms, the device dimension are encircled as below

The screenshot shows the LineCalc tool interface with the following data:

Substrate Parameters		
ID	MSUB_DEFAULT	
Er	10.200	N/A
Mur	1.000	N/A
H	254.000	um
Hu	3.9e+34	mil
T	17.000	um
Cond	5.88e7	N/A
TanD	0.002	N/A
Rough	0.000	mil
DielectricLossModel	1.000	N/A
FreqForEpsrTanD	1.0e9	N/A
LowFreqForTanD	1.0e3	N/A
HighFreqForTanD	1.0e12	N/A

Physical		
W	224.448000	um
L	1605.510000	um

Electrical		
Z0	50.000	Ohm
E_Eff	90.000	deg

Calculated Results		
K_Eff	6.725	
A_DB	0.032	
SkinDepth	0.019	

Diagram: A 3D perspective view of a microstrip line on a substrate. The width of the strip is labeled 'W' and the length is labeled 'L'. The substrate has a thickness 'H'. The top surface of the substrate is labeled '1' and the bottom surface is labeled '2'.

Values are consistent

For $Z_0 = \text{Squareroot of } 2 * 50 = 70.71$

Therefore rounding off $Z_0 = 70$ Ohms, the device dimension are encircled as below

LineCalc/untitled

File Simulation Options Help

Component
Type: MLIN ID: MLIN: MLIN_DEFAULT

Substrate Parameters
ID: MSUB_DEFAULT

Er	10.200	N/A
Mur	1.000	N/A
H	254.000	um
Hu	3.9e+34	mil
T	17.000	um
Cond	5.88e7	N/A
TanD	0.002	N/A
Rough	0.000	mil
DielectricLossModel	1.000	N/A
FreqForEpsrTanD	1.0e9	N/A
LowFreqForTanD	1.0e3	N/A
HighFreqForTanD	1.0e12	N/A

Component Parameters
Freq: 18.000 GHz
Wall1: mil
Wall2: mil

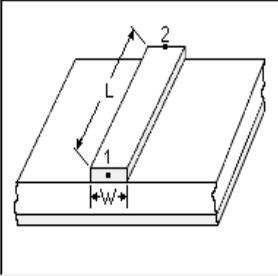
Physical
W: 91.796300 um
L: 1679.120000 um

Synthesize Analyze

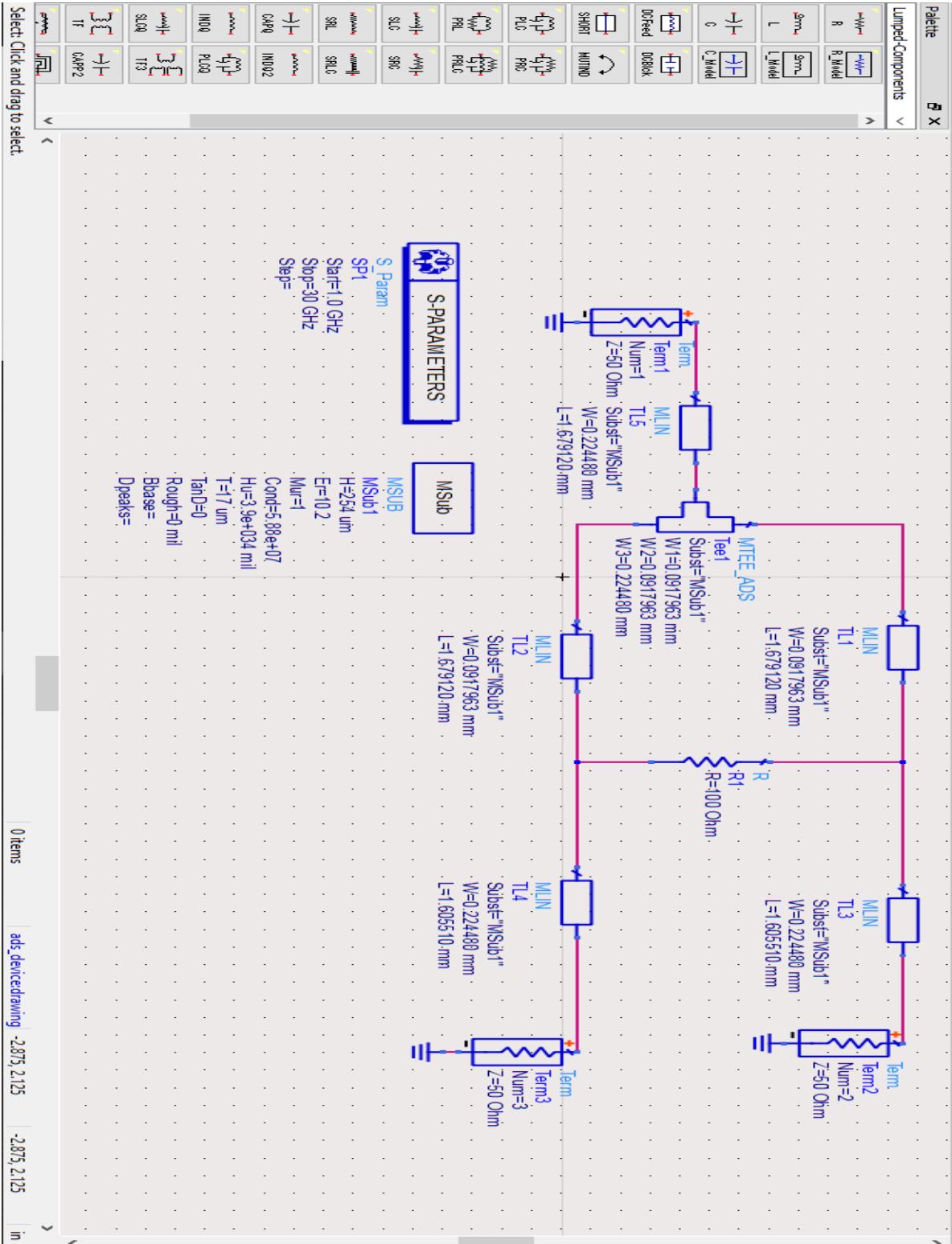
Electrical
Z0: 70.000 Ohm
E_Eff: 90.000 deg

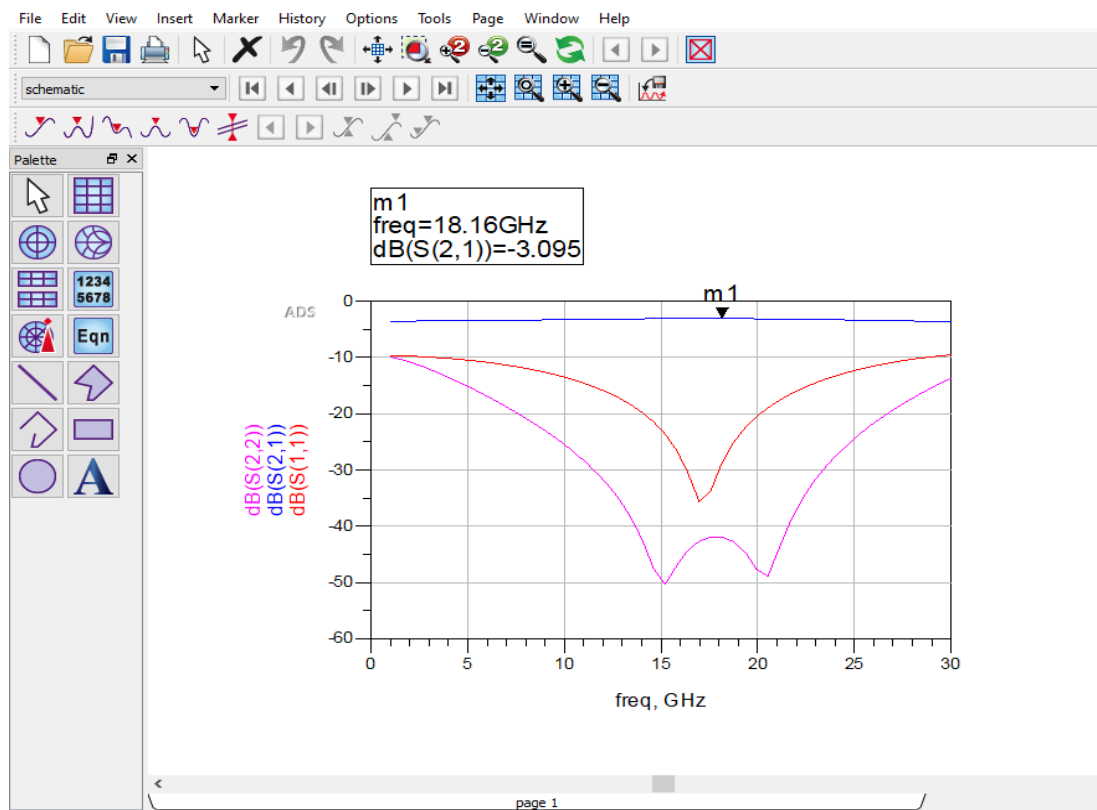
Calculated Results
K_Eff = 6.149
A_DB = 0.047
SkinDepth = 0.019

Values are consistent



2. Run Simulation using ADS Software





Plot Layout:

