

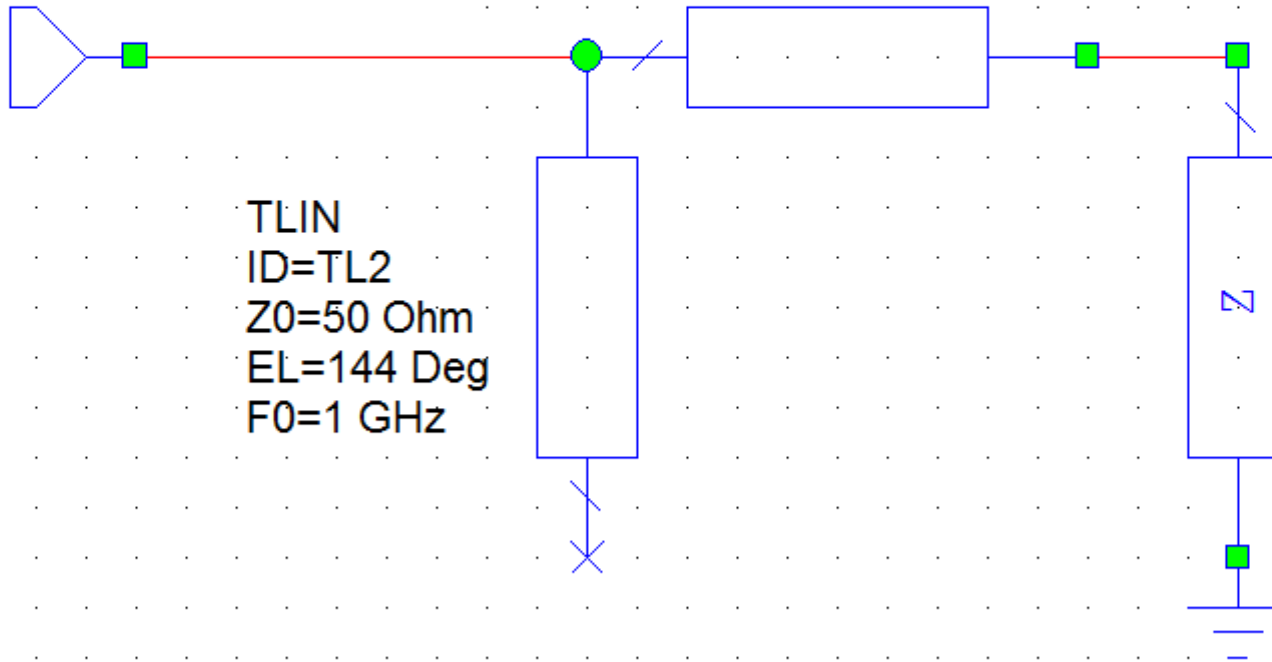
Progetto di base con MWO di un
amplificatore di guadagno

PORT
P=1
Z=50 Ohm

TLIN
ID=TL1
Z0=50 Ohm
EL=115 Deg
F0=1 GHz

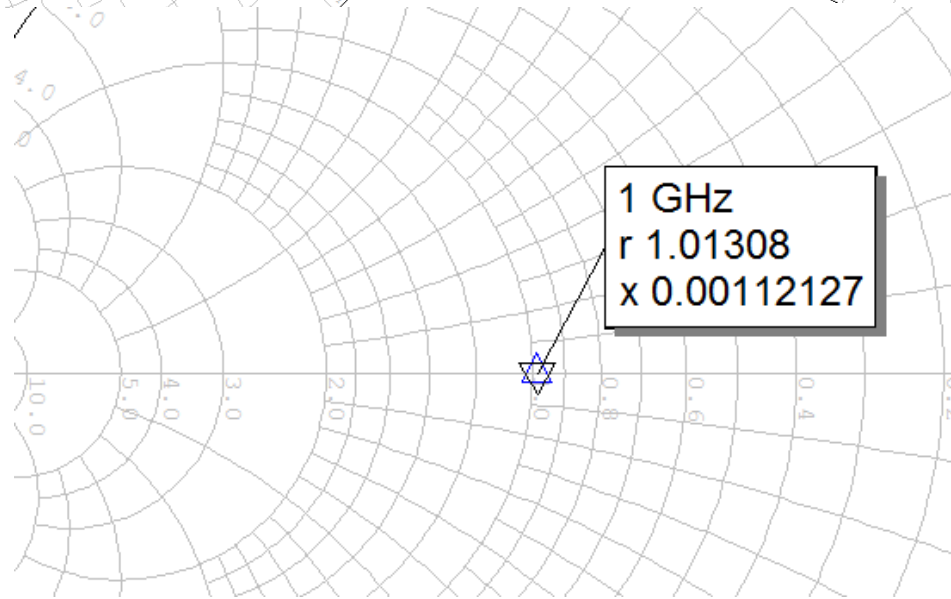
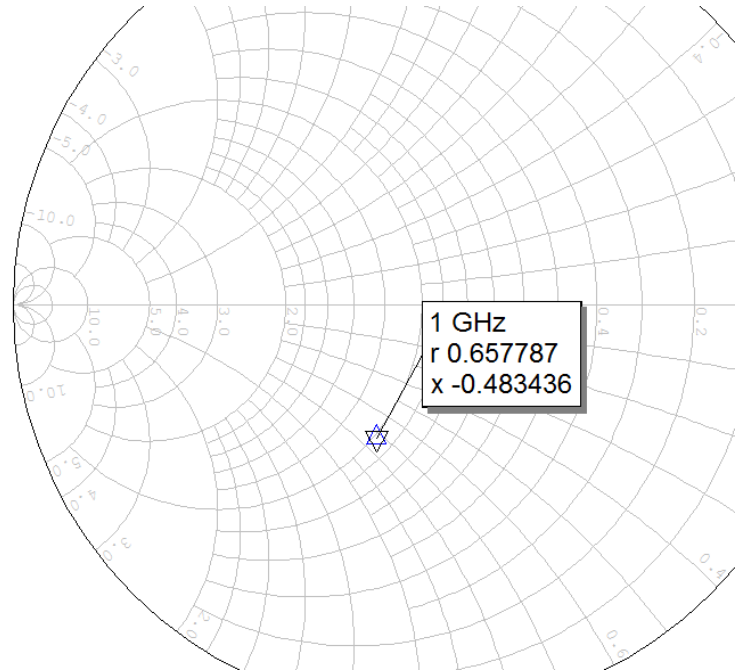
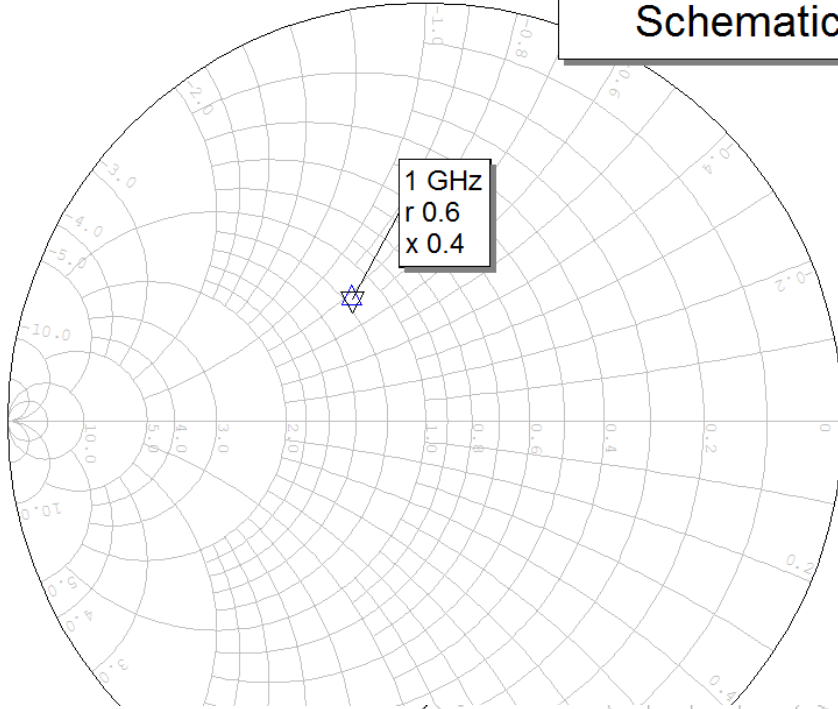
TLIN
ID=TL2
Z0=50 Ohm
EL=144 Deg
F0=1 GHz

IMPED
ID=Z1
R=30 Ohm
X=20 Ohm

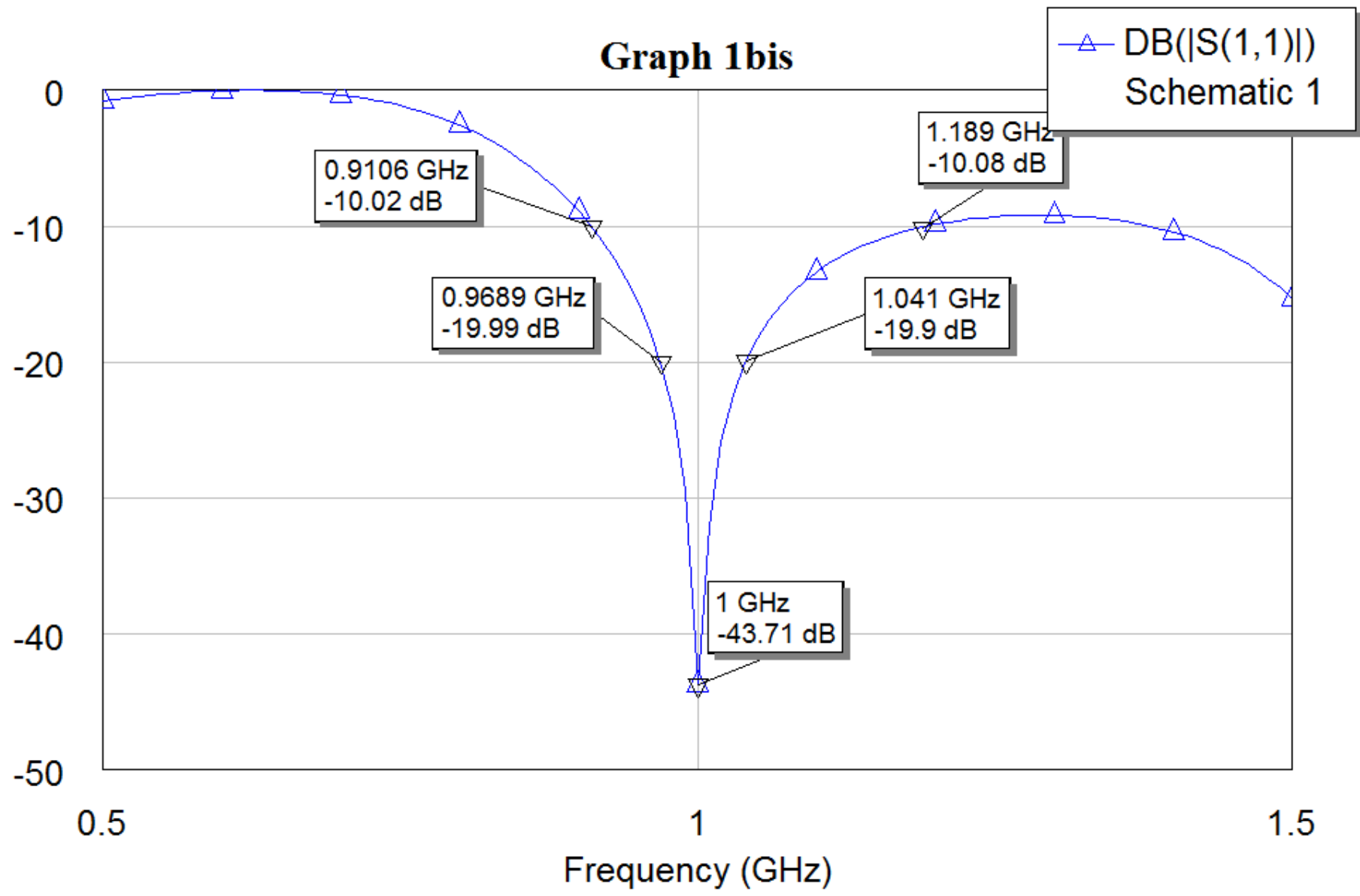


Graph 1

—△ S(1,1)
Schematic 1



Graph 1bis

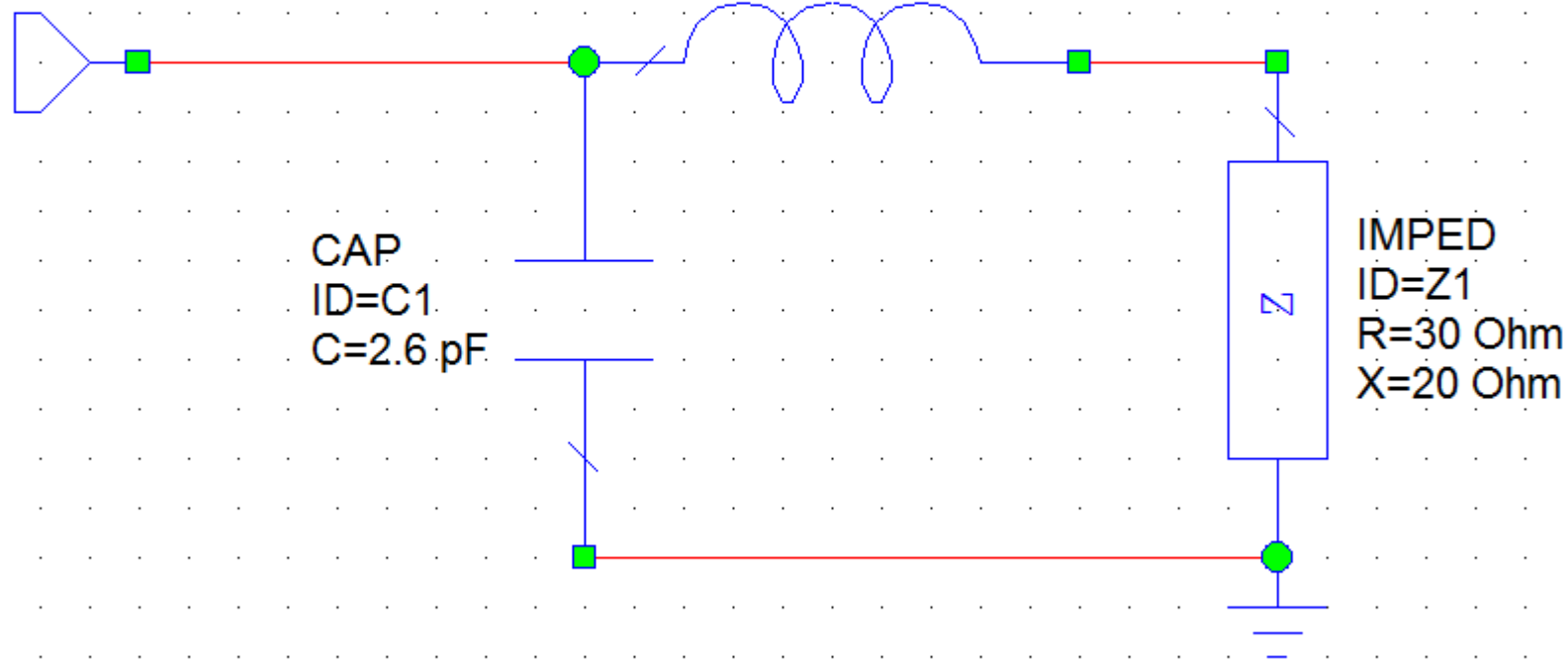


PORT
P=1
Z=50 Ohm

IND
ID=L1
L=0.8 nH

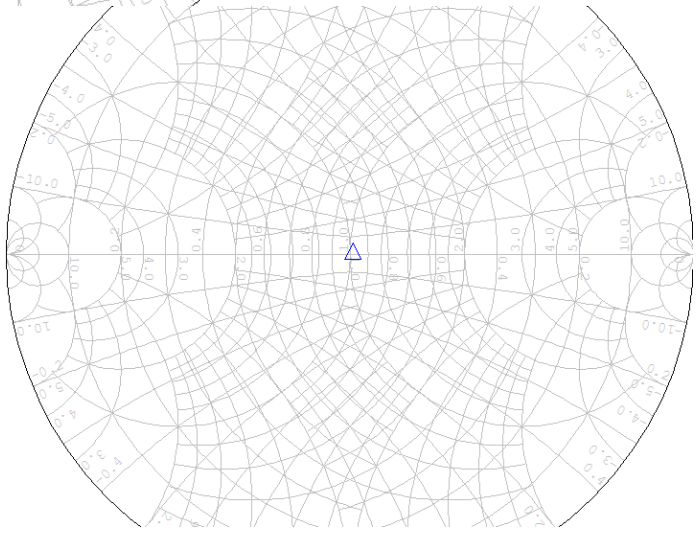
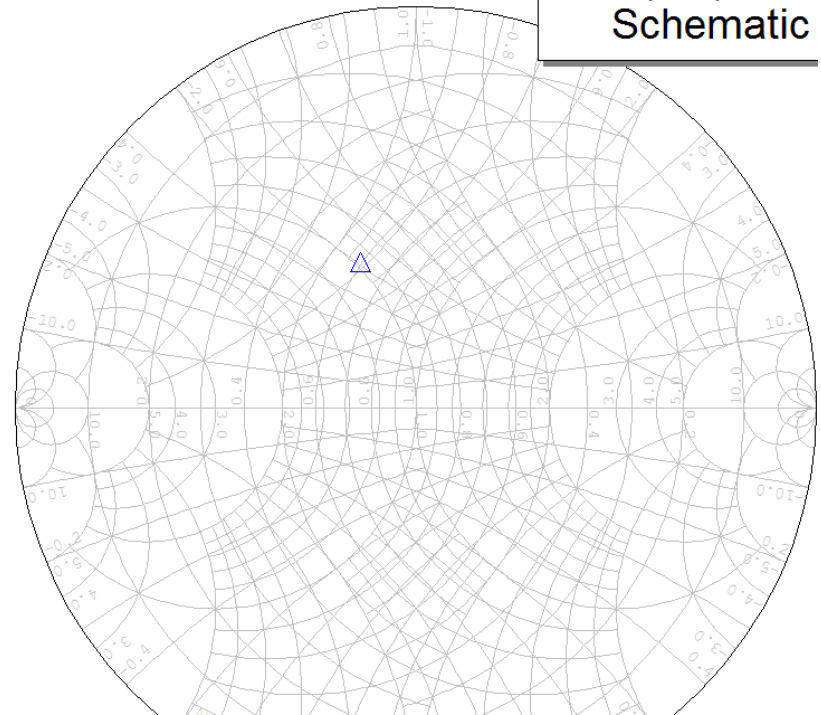
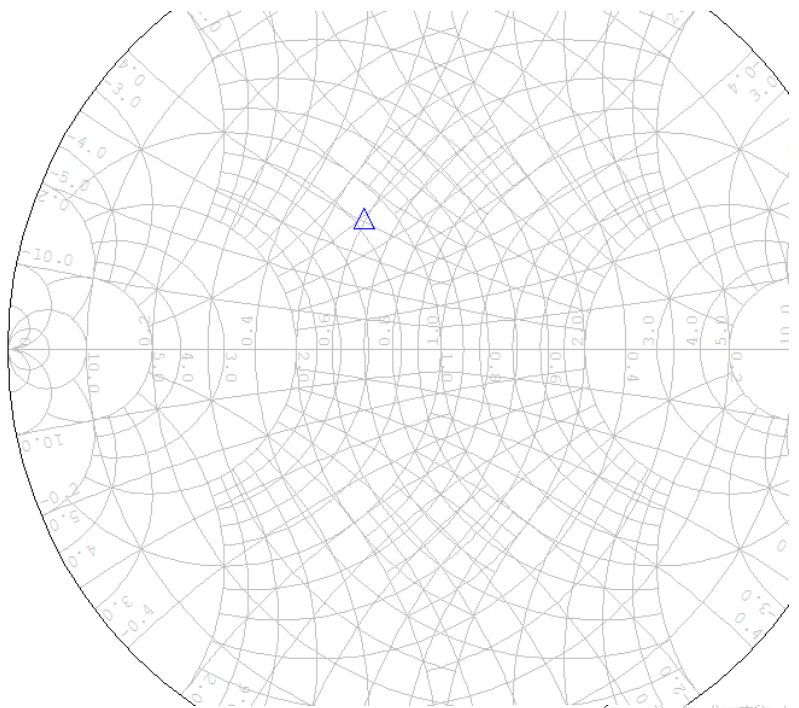
CAP
ID=C1
C=2.6 pF

IMPED
ID=Z1
R=30 Ohm
X=20 Ohm

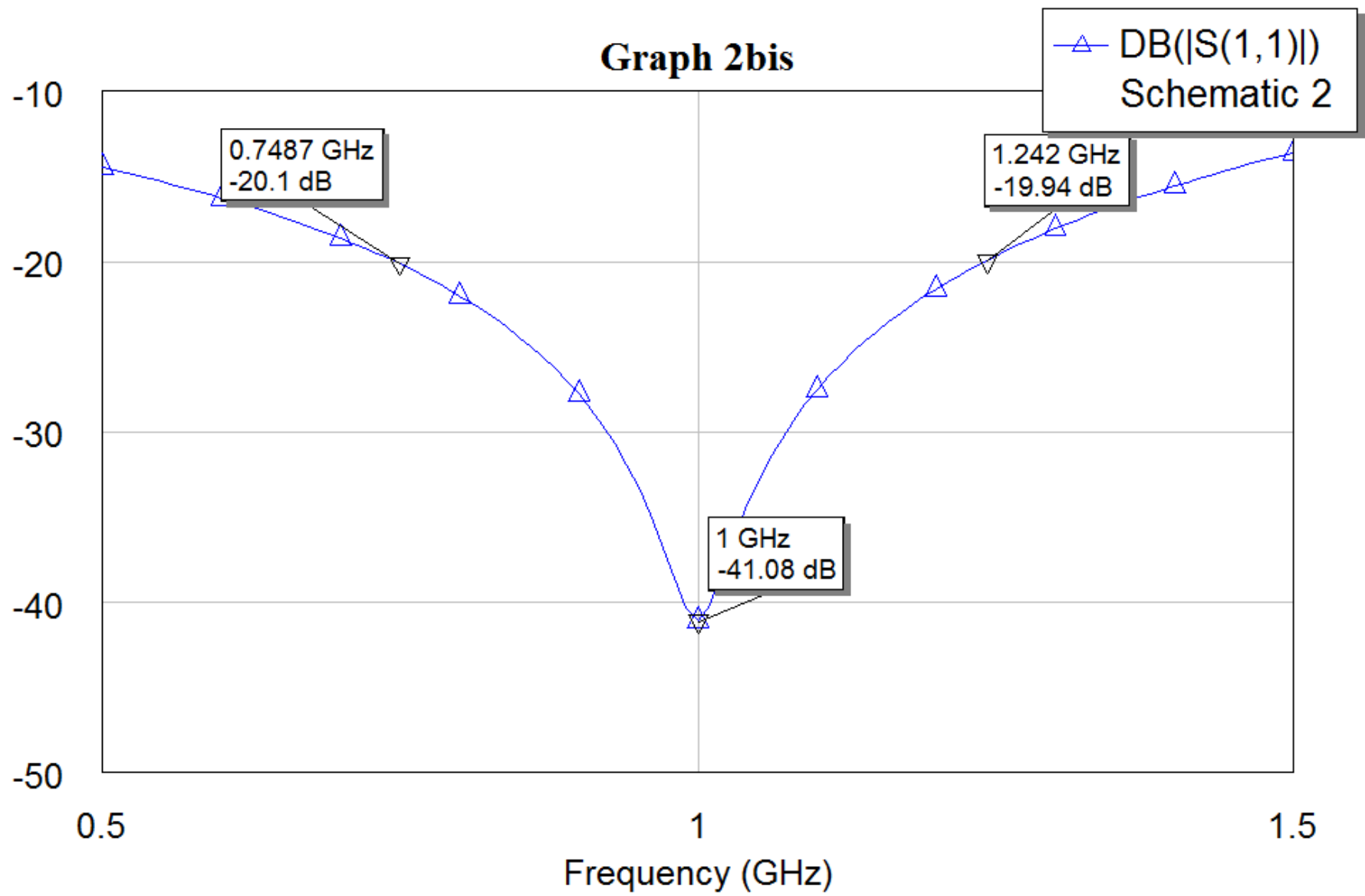


Graph 2

—△— S(1,1)
Schematic



Graph 2bis

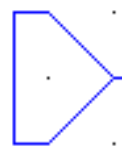


- Data File
- Import data file
- Import N71083A

- Element – subcircuits N71083A
- Properties – symbol - FET2

SUBCKT
ID=S1
NET="N71083A"

PORT
P=1
Z=50 Ohm



1



2

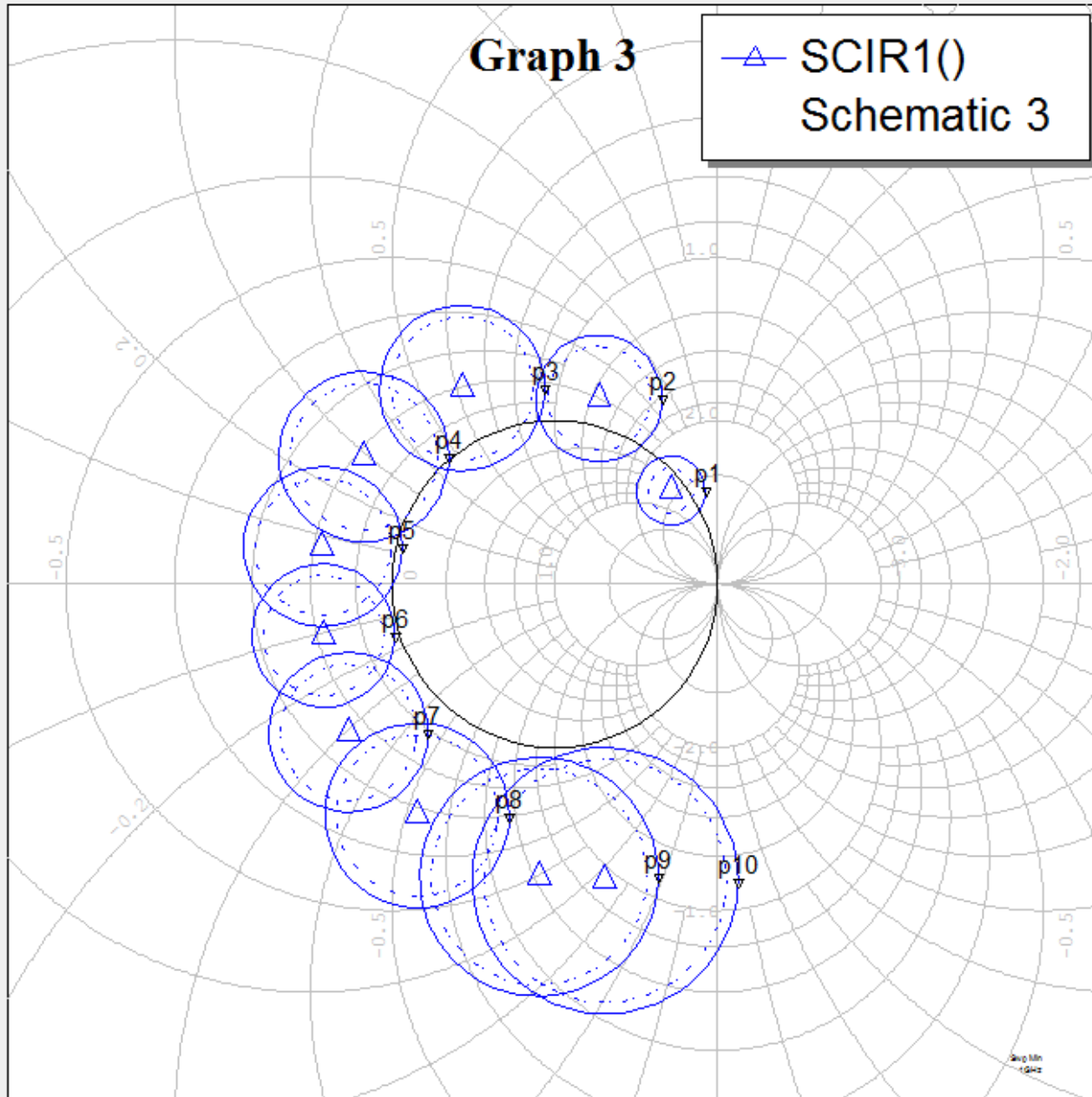


PORT
P=2
Z=50 Ohm



Graph 3

—△— SCIR1()
Schematic 3



p1: Freq = 1 GHz
Stability = 1

p2: Freq = 3 GHz
Stability = 1

p3: Freq = 5 GHz
Stability = 1

p4: Freq = 7 GHz
Stability = 1

p5: Freq = 9 GHz
Stability = 1

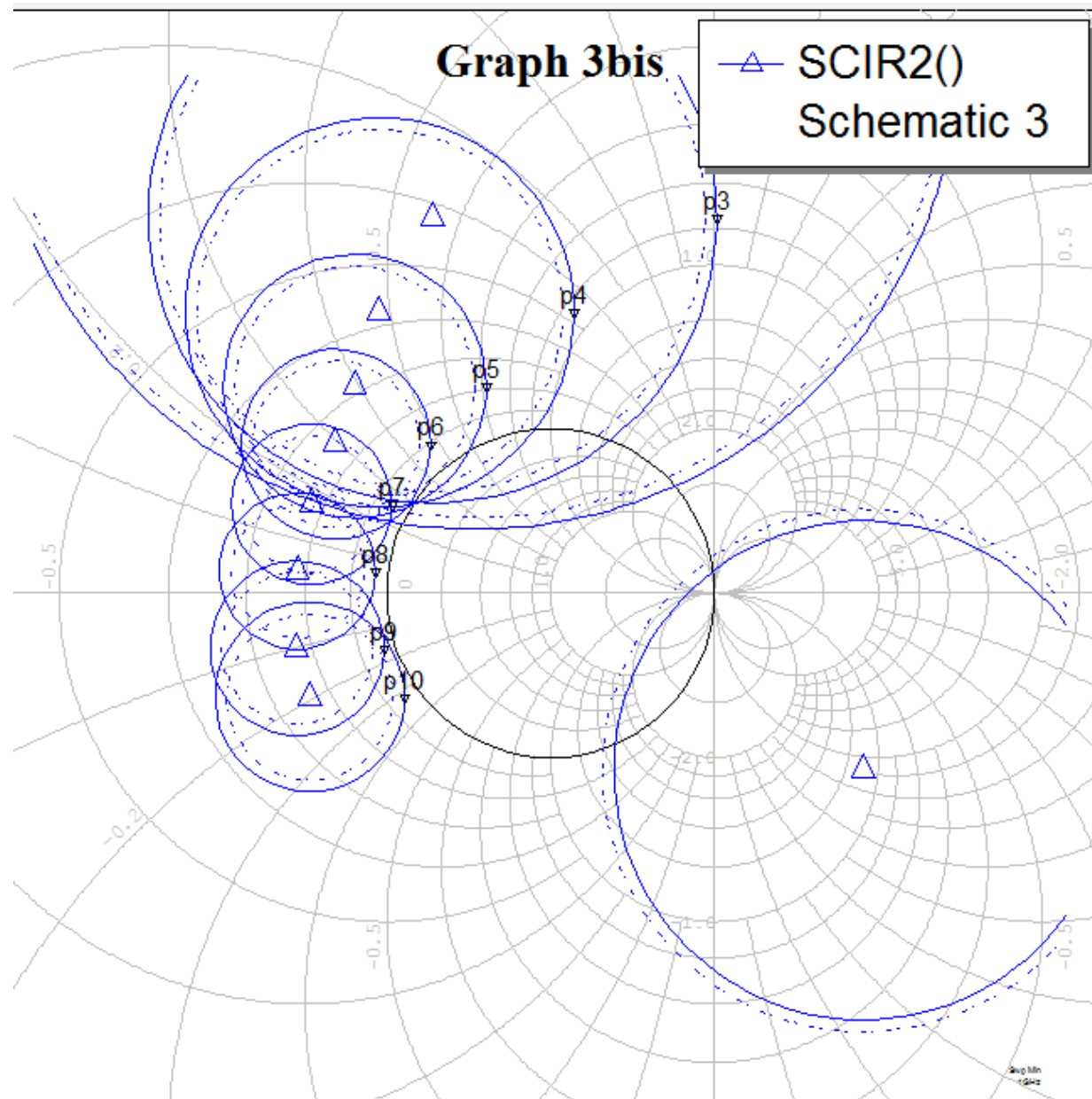
p6: Freq = 11 GHz
Stability = 1

p7: Freq = 13 GHz
Stability = 1

p8: Freq = 15 GHz
Stability = 1

p9: Freq = 17 GHz
Stability = 1

p10: Freq = 18 GHz
Stability = 1



p1: Freq = 1 GHz
Stability Index = -1

p2: Freq = 3 GHz
Stability Index = 1

p3: Freq = 5 GHz
Stability Index = 1

p4: Freq = 7 GHz
Stability Index = 1

p5: Freq = 9 GHz
Stability Index = 1

p6: Freq = 11 GHz
Stability Index = 1

p7: Freq = 13 GHz
Stability Index = 1

p8: Freq = 15 GHz
Stability Index = 1

p9: Freq = 17 GHz
Stability Index = 1

p10: Freq = 18 GHz
Stability Index = 1

Output Equations – New Output equations – (name =) delta

Draw – add output equation (dare un nome ed importare su output equation)

Draw add equation delta = S11*S22-S21*S12

$$S11 = \text{Schematic 3:S(1,1)}$$

$$S22 = \text{Schematic 3:S(2,2)}$$

$$S21 = \text{Schematic 3:S(2,1)}$$

$$S12 = \text{Schematic 3:S(1,2)}$$

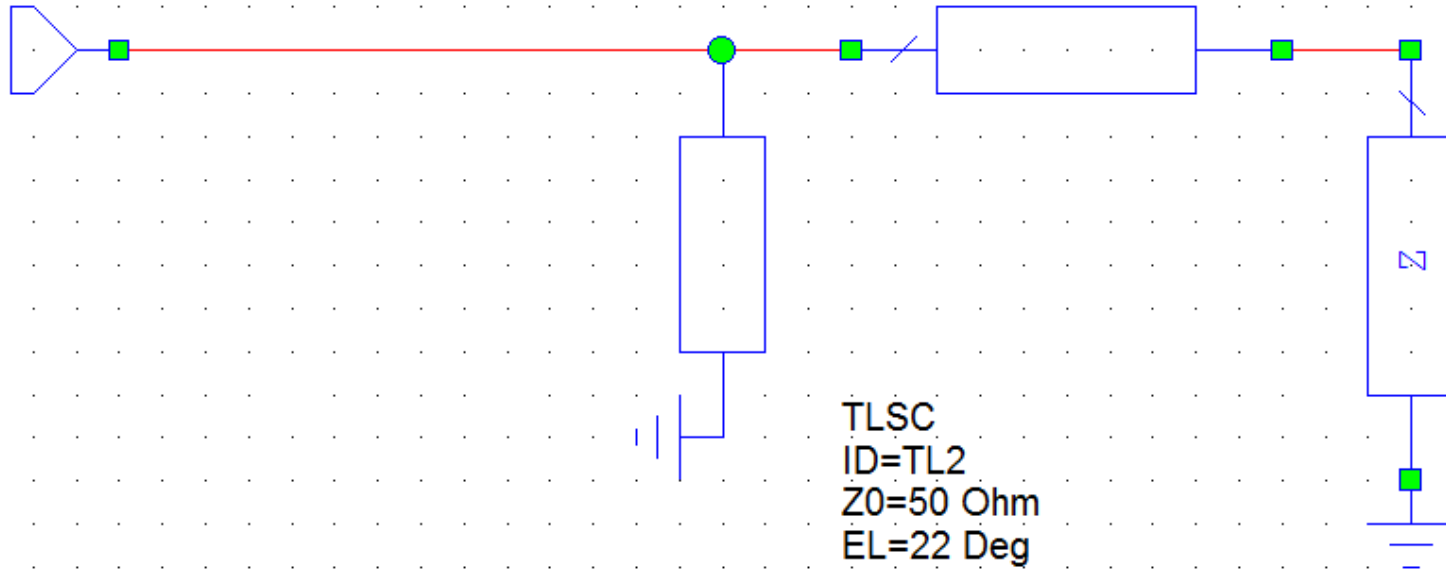
$$\text{delta} = S11*S22 - S12*S21$$

Frequency (GHz)	K() Schematic 3	Eqn(delta) delta	DB(GMax()) Schematic 3
1	-0.48941	0.78732	20.401
3	0.28258	0.61102	16.851
5	0.50042	0.50601	14.941
7	0.67964	0.43998	13.932
9	0.85909	0.39309	13.381
11	1.0501	0.33928	11.651
13	1.2158	0.28567	9.5957
15	1.2388	0.24386	8.6765
17	1.1515	0.16769	8.4154
18	1.0626	0.12952	8.6023

Frequency (GHz)	GM1() Schematic 3 Unitless data (Real)	GM1() Schematic 3 Unitless data (Imag)	GM2() Schematic 3 Unitless data (Real)	GM2() Schematic 3 Unitless data (Imag)	ZM1() Schematic 3 Unitless data (Real)	ZM1() Schematic 3 Unitless data (Imag)	ZM2() Schematic 3 Unitless data (Real)	ZM2() Schematic 3 Unitless data (Imag)
1		0		0		0		0
3		0		0		0		0
5		0		0		0		0
7		0		0		0		0
9		0		0		0		0
11	-0.88637	-0.1965	-0.73195	0.50761	2.4429	-5.4629	3.1711	15.584
13	-0.65554	-0.46954	-0.75584	0.2809	5.9063	-15.856	5.5316	8.8841
15	-0.39932	-0.67035	-0.7975	0.069645	8.1241	-27.845	5.5495	2.1523
17	-0.04271	-0.79275	-0.80787	-0.17475	10.775	-46.206	4.8017	-5.2973
18	0.14308	-0.84152	-0.80748	-0.34646	9.4066	-58.339	3.3648	-10.229

PORT
P=1
Z=50 Ohm

TLIN
ID=TL1
Z0=50 Ohm
EL=130.9 Deg
F0=15 GHz



TLSC
ID=TL2
Z0=50 Ohm
EL=22 Deg
F0=15 GHz

IMPED
ID=Z1
R=8.12 Ohm
X=27.84 Ohm

PORT
P=1
Z=50 Ohm



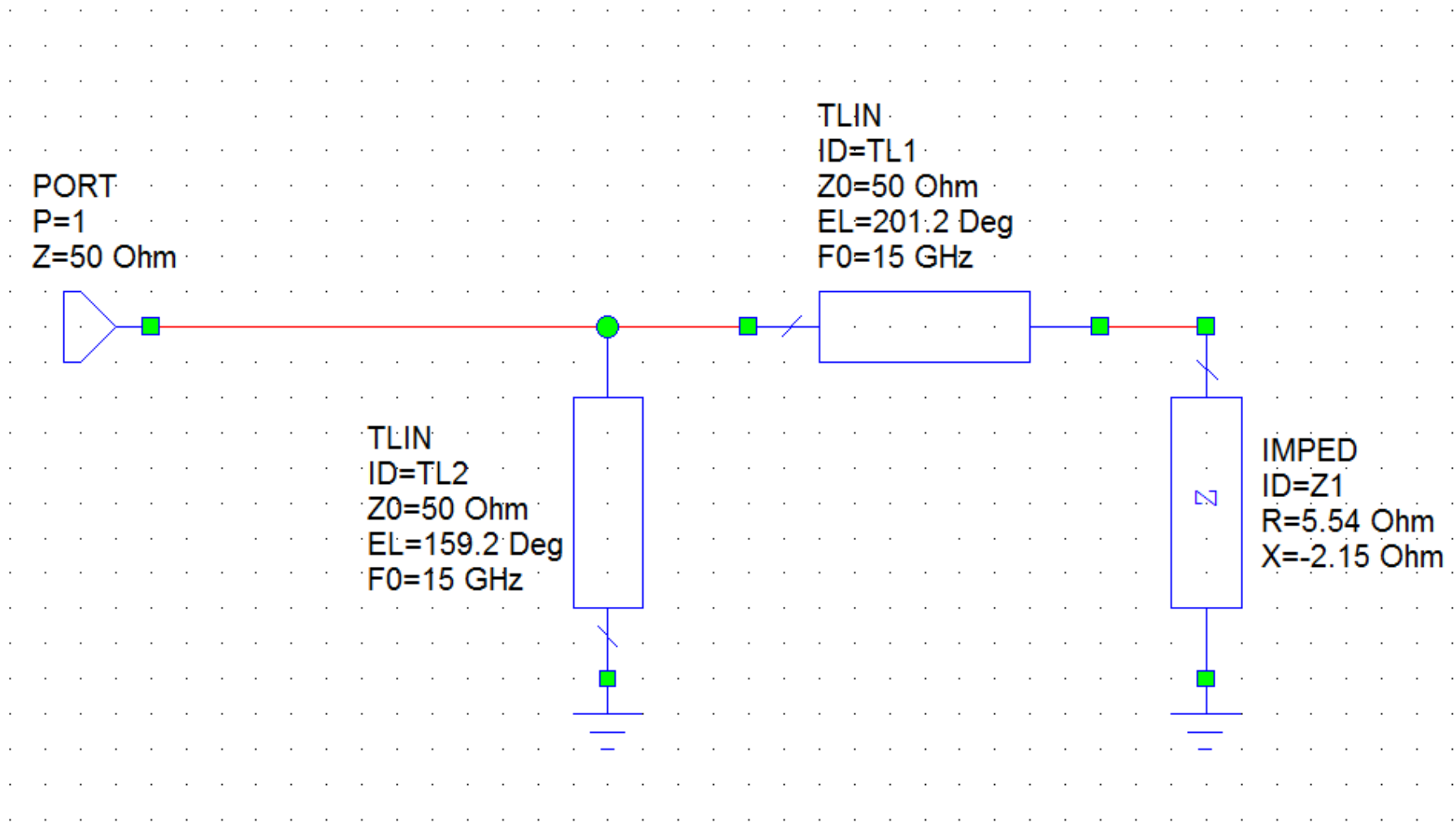
TLIN
ID=TL2
Z0=50 Ohm
EL=159.2 Deg
F0=15 GHz



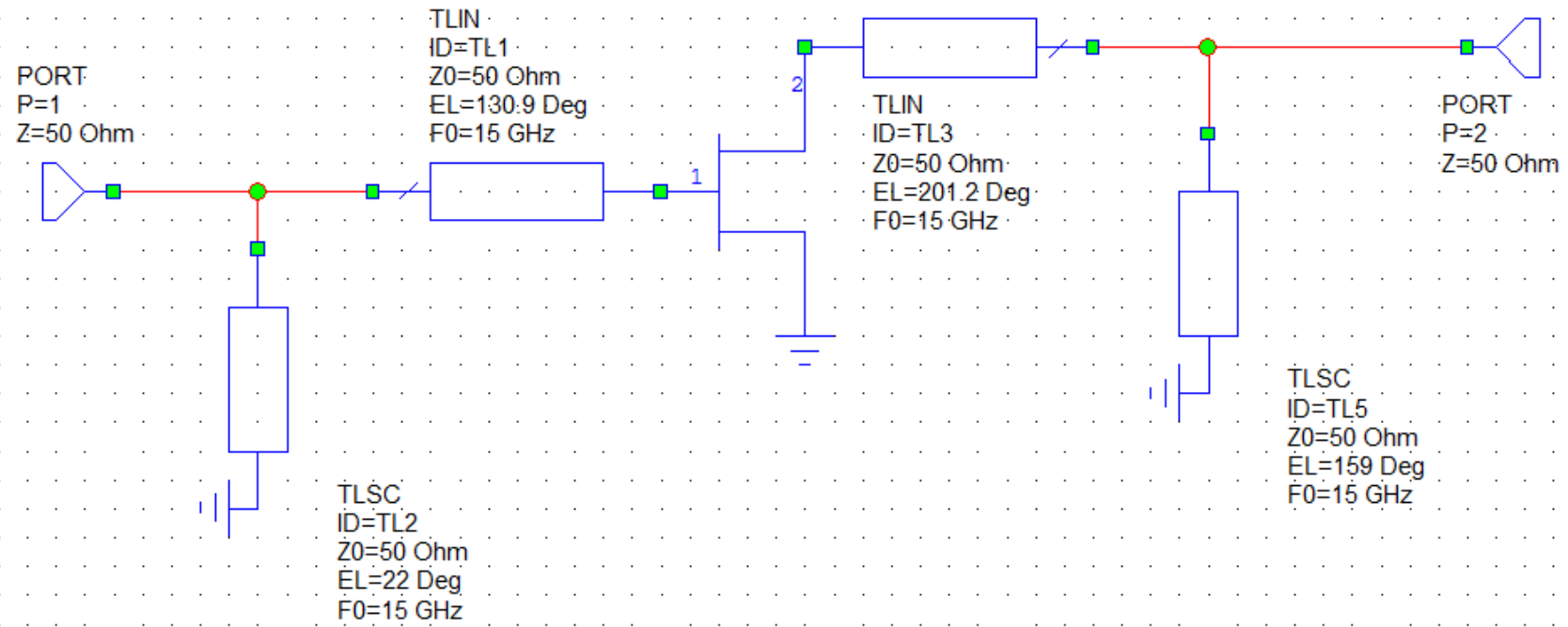
TLIN
ID=TL1
Z0=50 Ohm
EL=201.2 Deg
F0=15 GHz



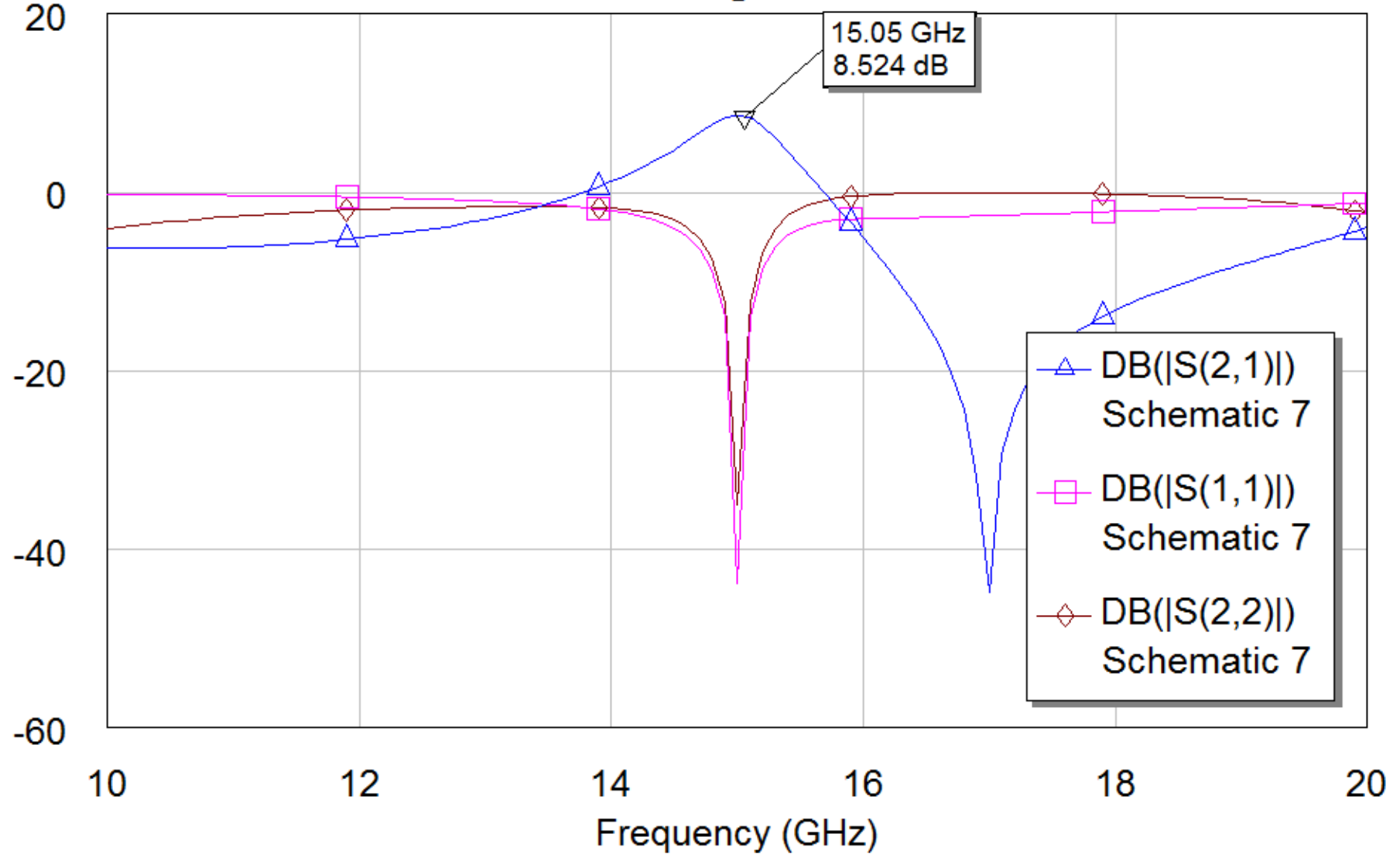
IMPED
ID=Z1
R=5.54 Ohm
X=-2.15 Ohm



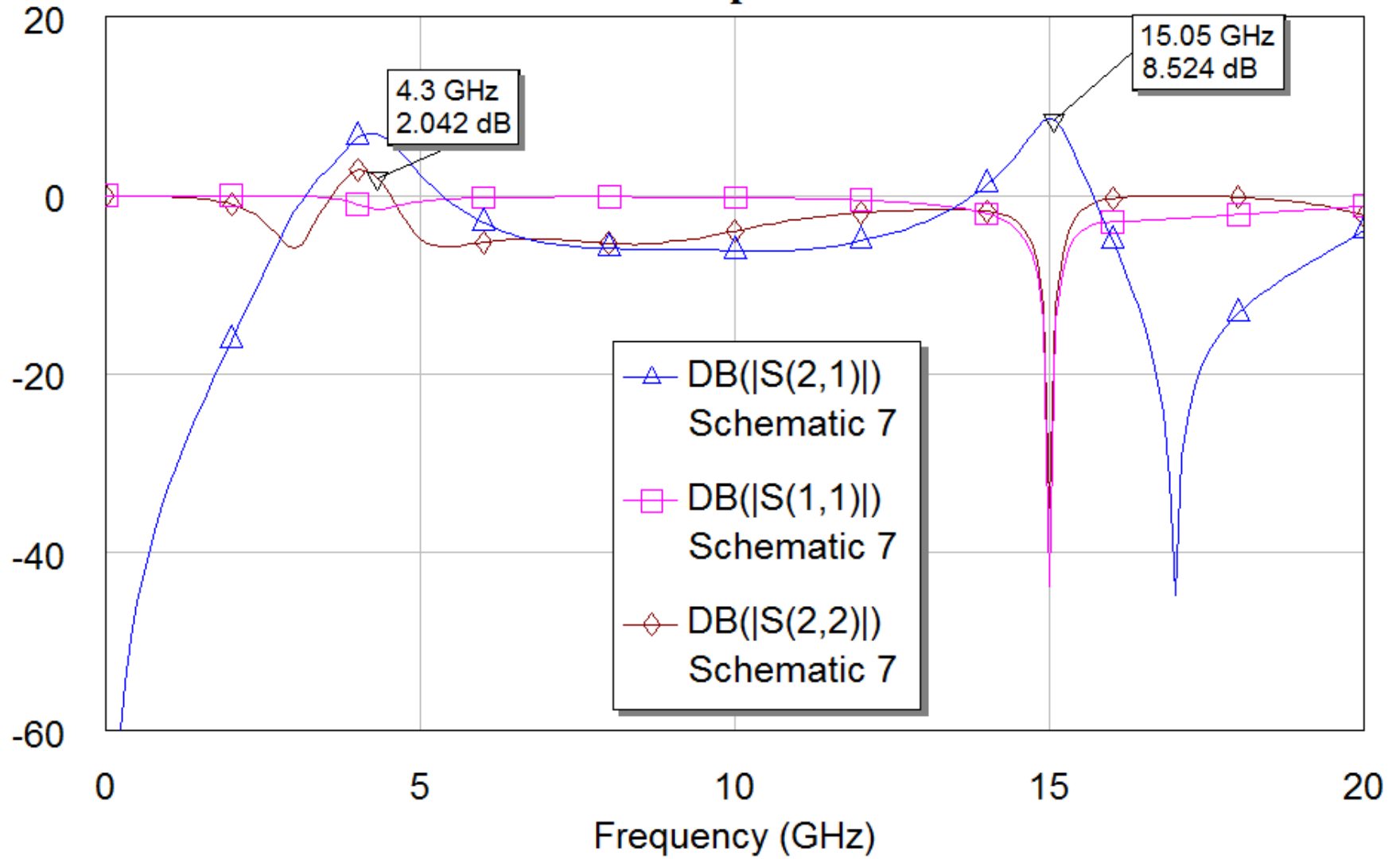
SUBCKT
ID=S1
NET="N71083A"

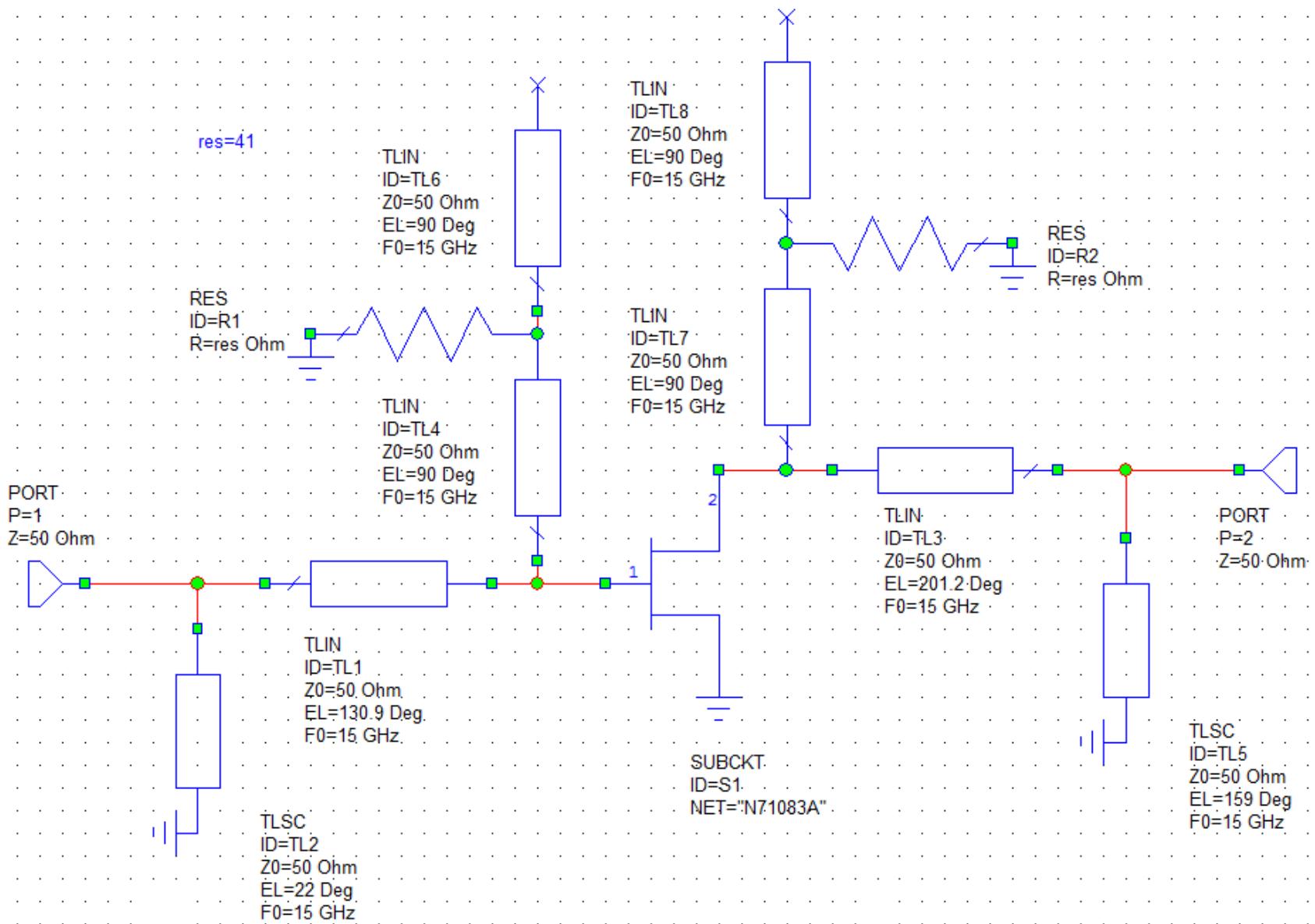


Graph 7

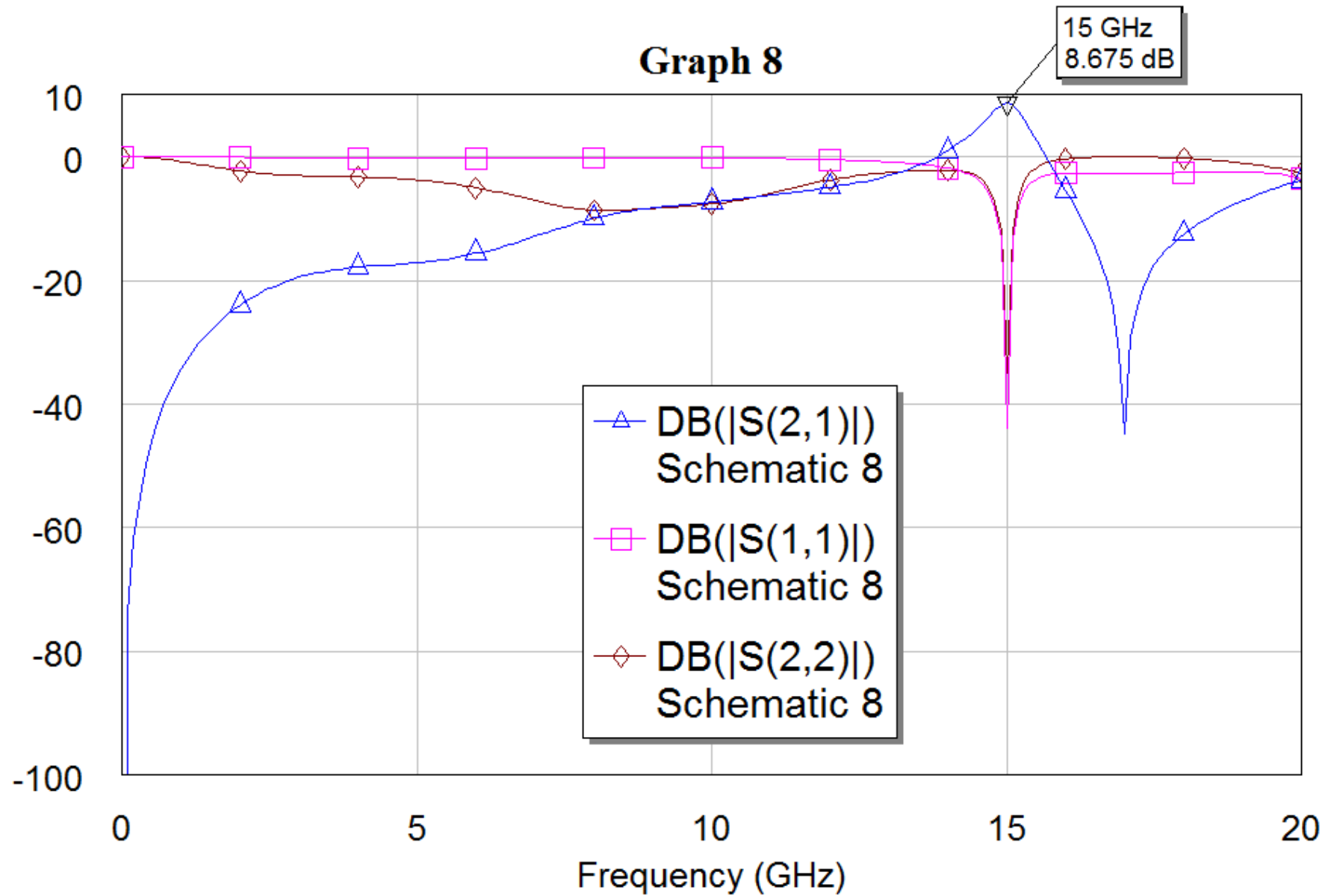


Graph 7

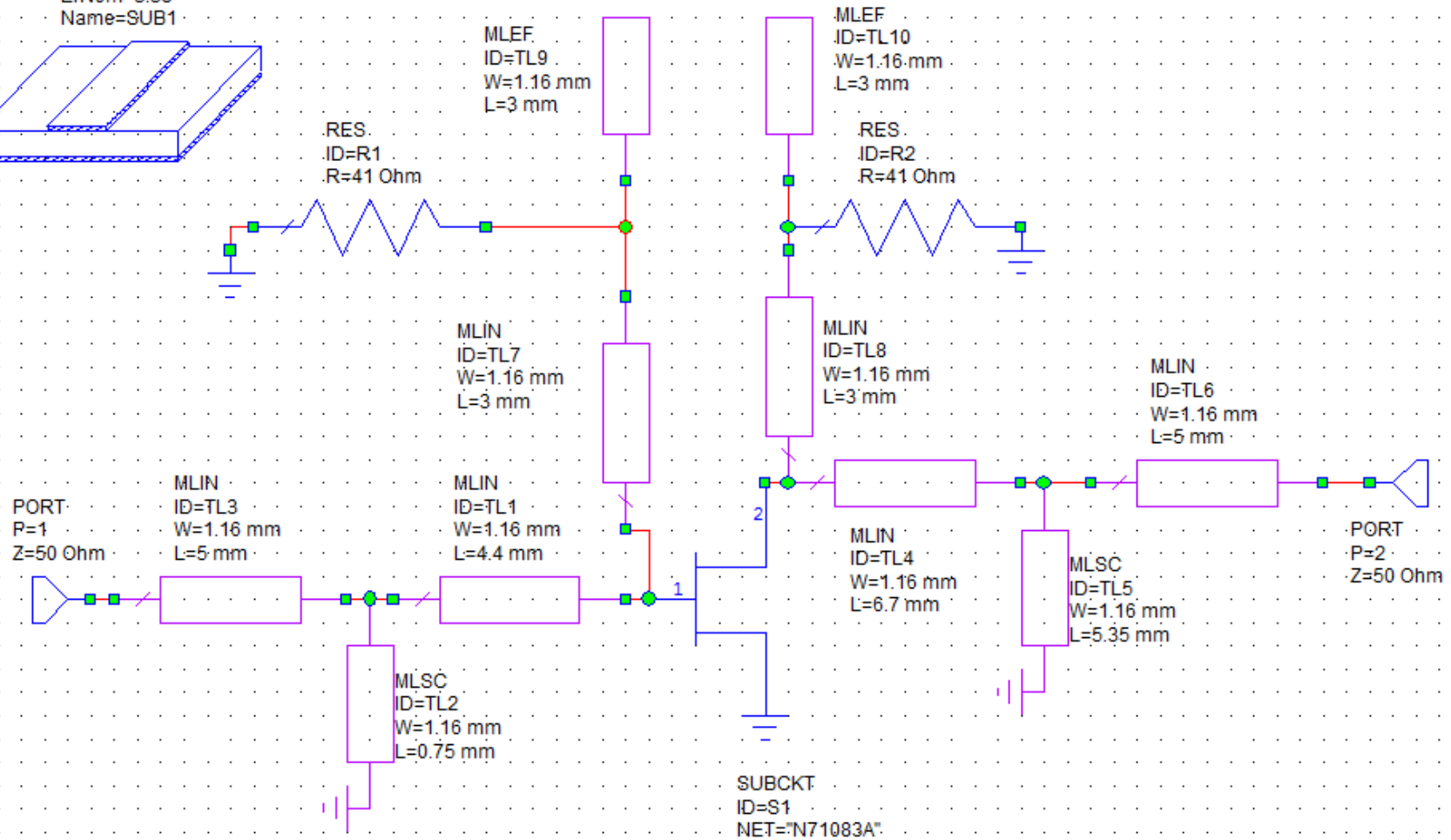
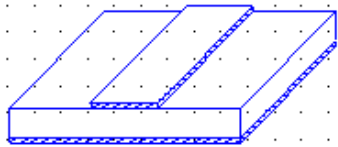




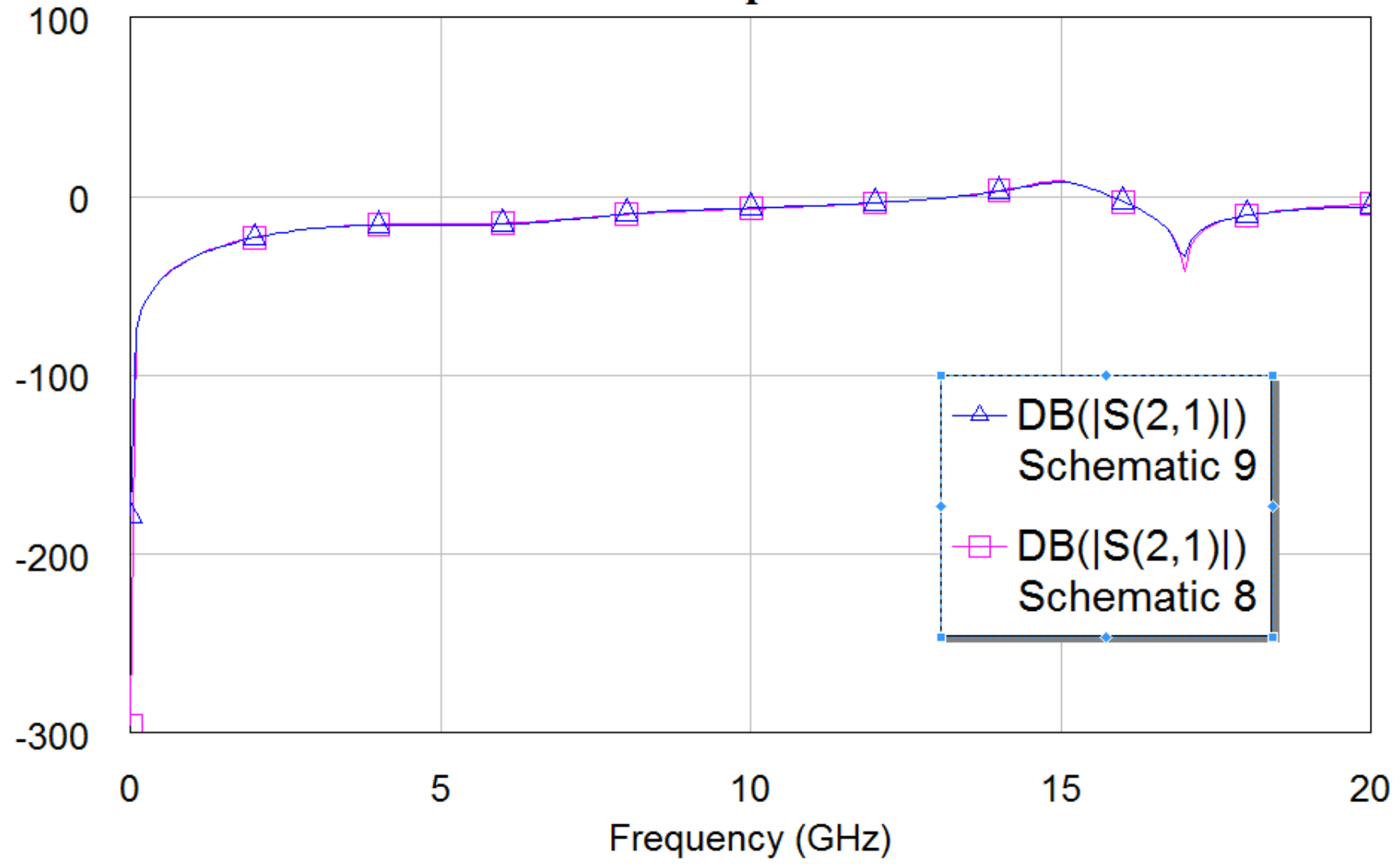
Graph 8



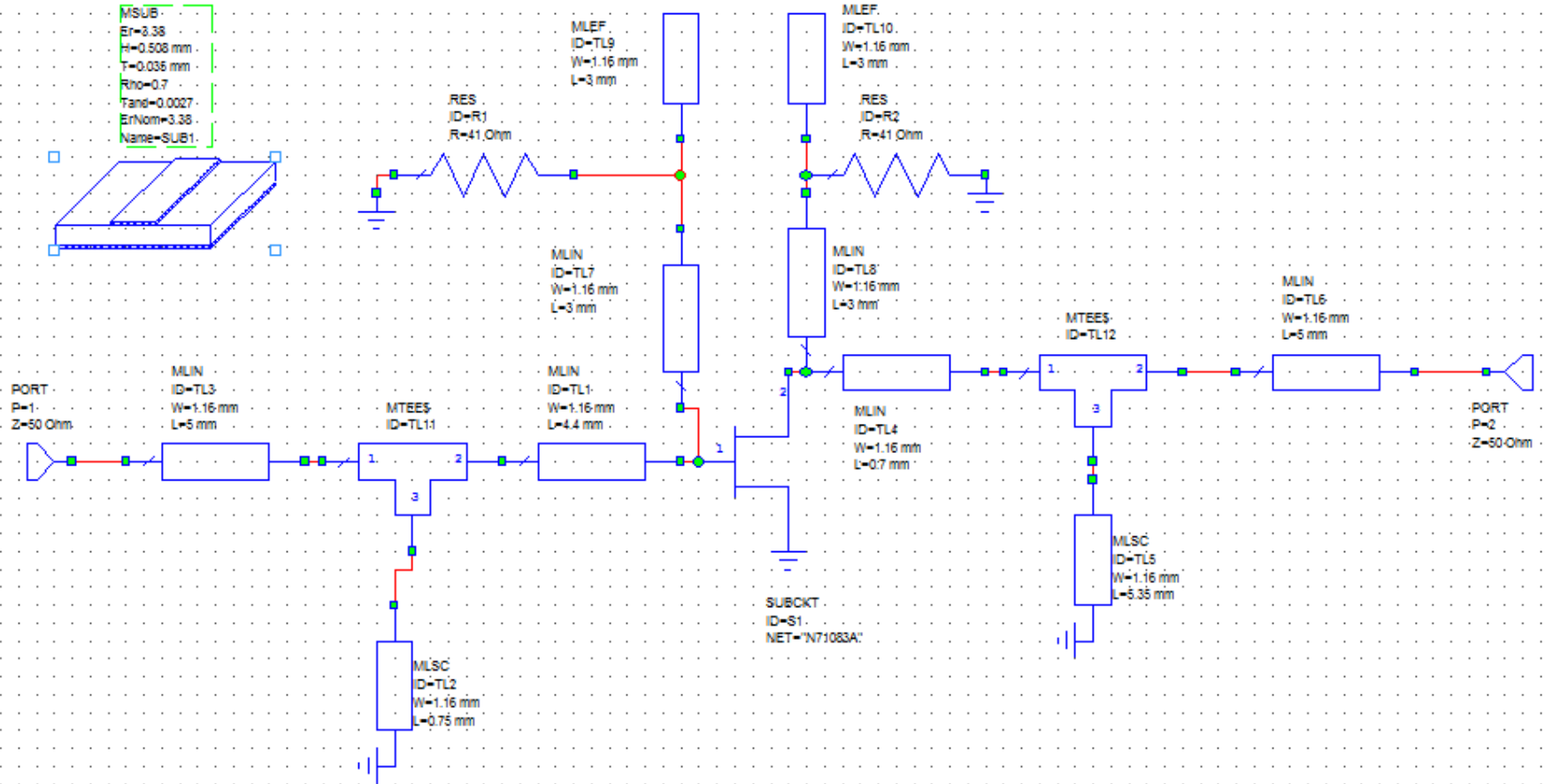
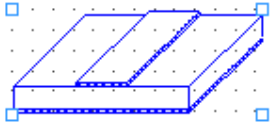
MSUB
 Er=3.38
 H=0.508 mm
 T=0.035 mm
 Rho=0.7
 Tand=0.0027
 ErNom=3.38
 Name=SUB1



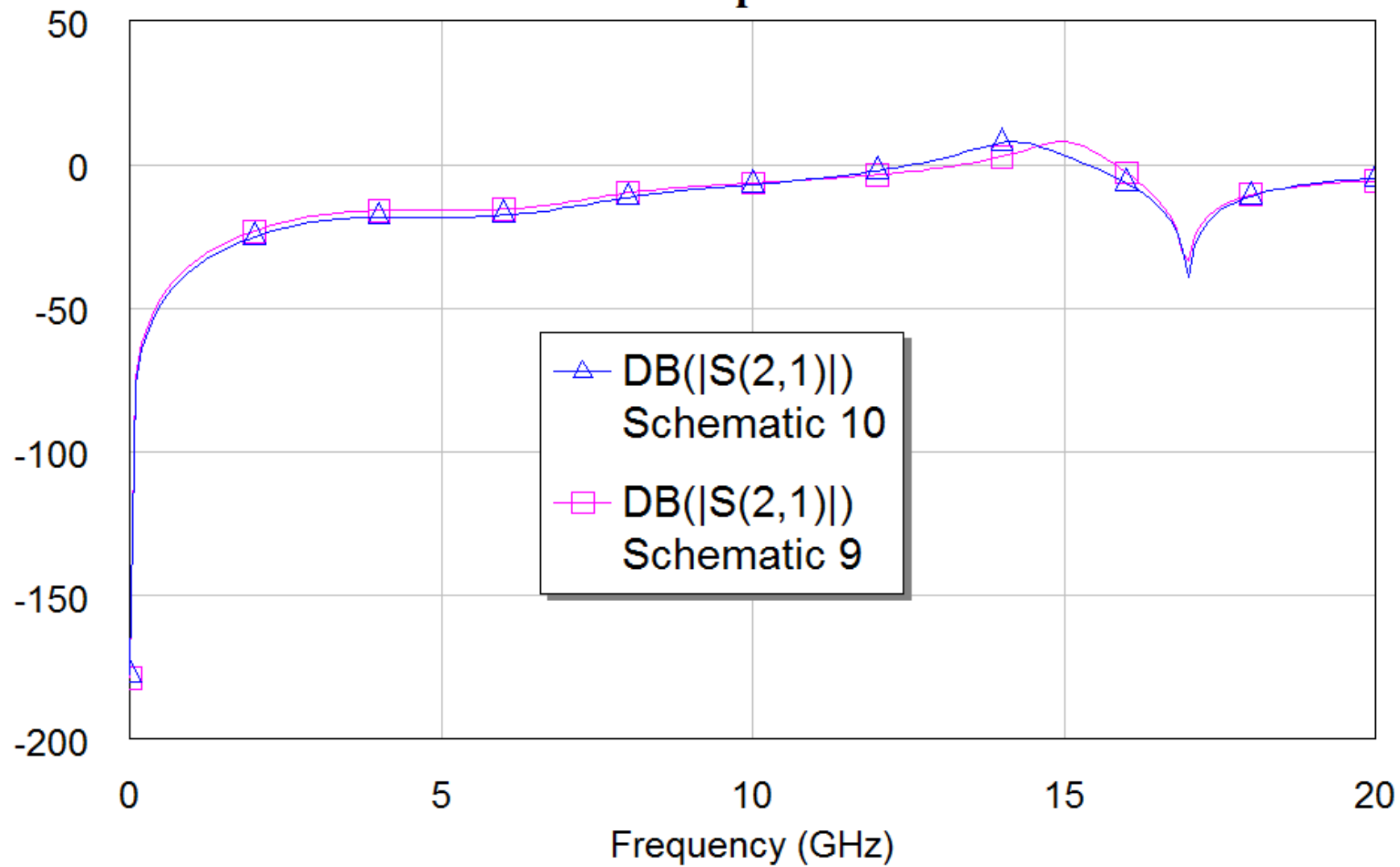
Graph 9



MSUB
 Er=3.38
 H=0.508 mm
 T=0.035 mm
 Rho=0.7
 Tand=0.0027
 ErNom=3.38
 Name=SUB1



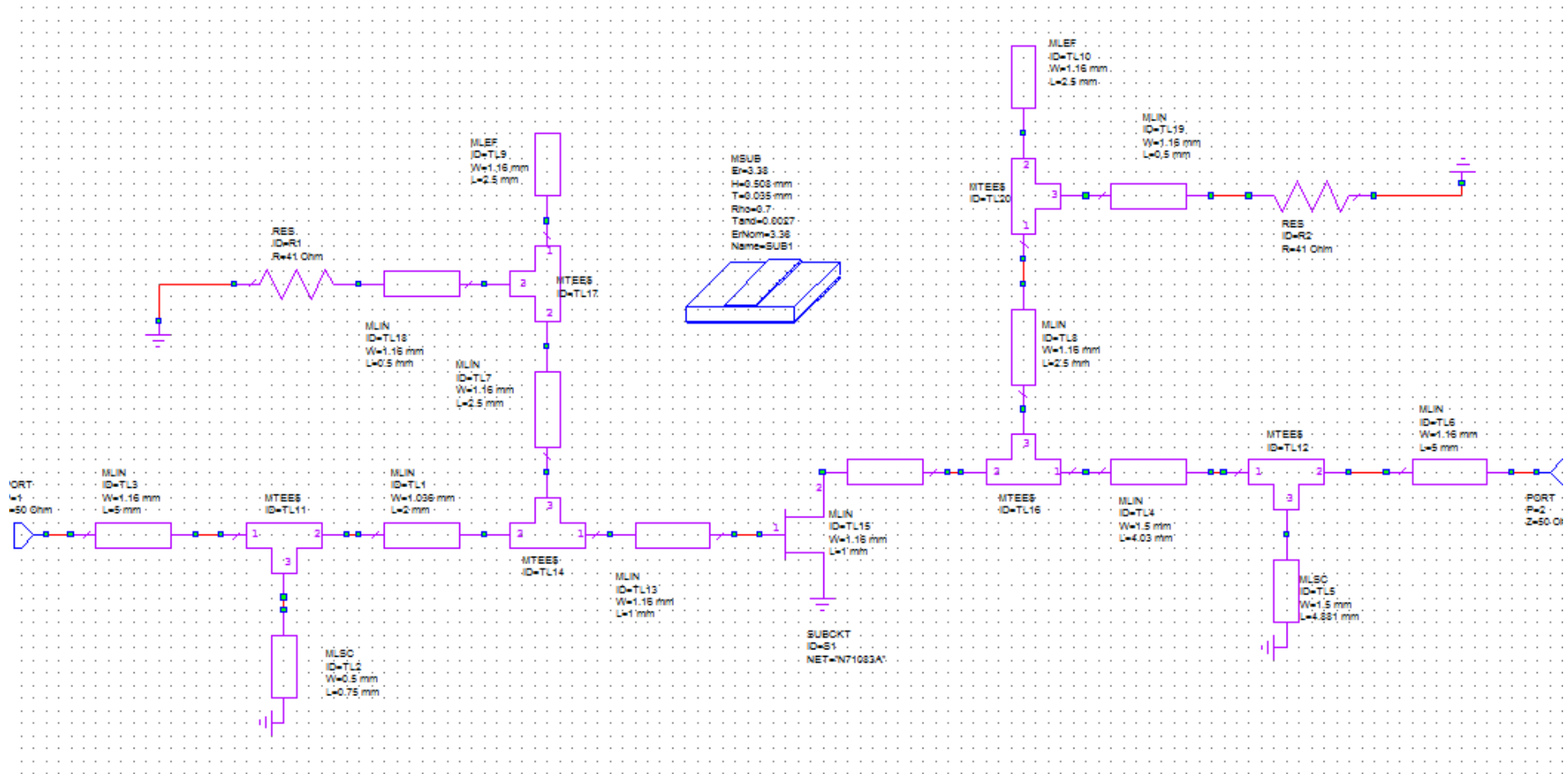
Graph 10



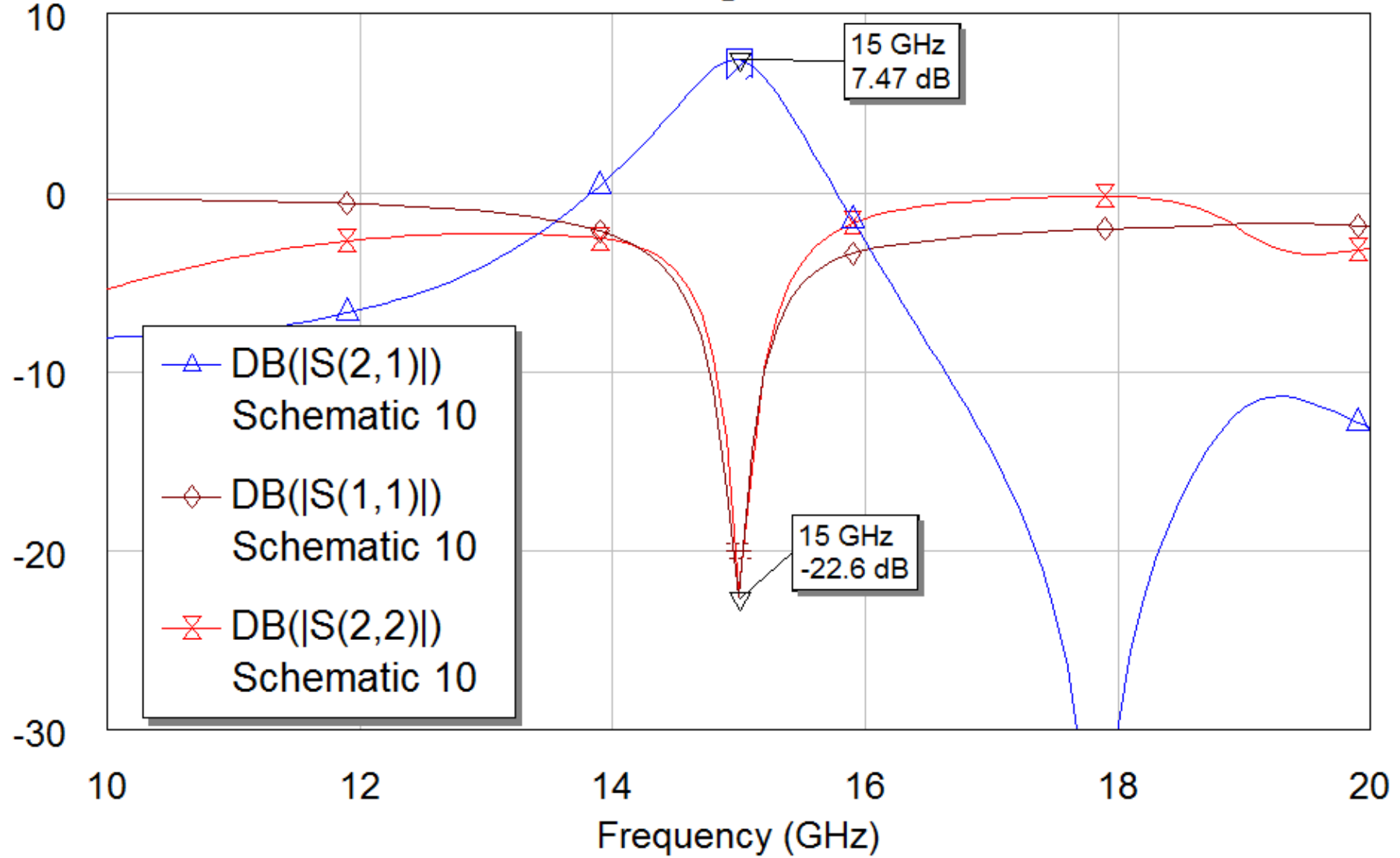
- Tutte le strisce in opt su W con limiti 0.5 - 1.5
- Quelle lunghe in opt su L con limiti
L-2mm - L + 1mm

- $S_{21} > 8$ dB tra 14.9 GHz e 15.1 GHz
- S_{11} e $S_{22} < -20$ dB tra 14.9 GHz e 15.1 GHz

- Peso 1 su S_{21} , peso 10 su S_{11} e S_{22}



Graph 10



- Layer setup -> import process definition
-> MIC_metric.lpf (dentro la directory di AWR)
- Cell libraries -> import GDSII library
-> SOT.gds e Standard chip components.gds

