PROJECT REPORT ON

DESIGNING OF AN UNIT CELL FOR INTELLIGENT METASURFACE

Submitted To: Dr. Ashwini Sharma

Submitted By:

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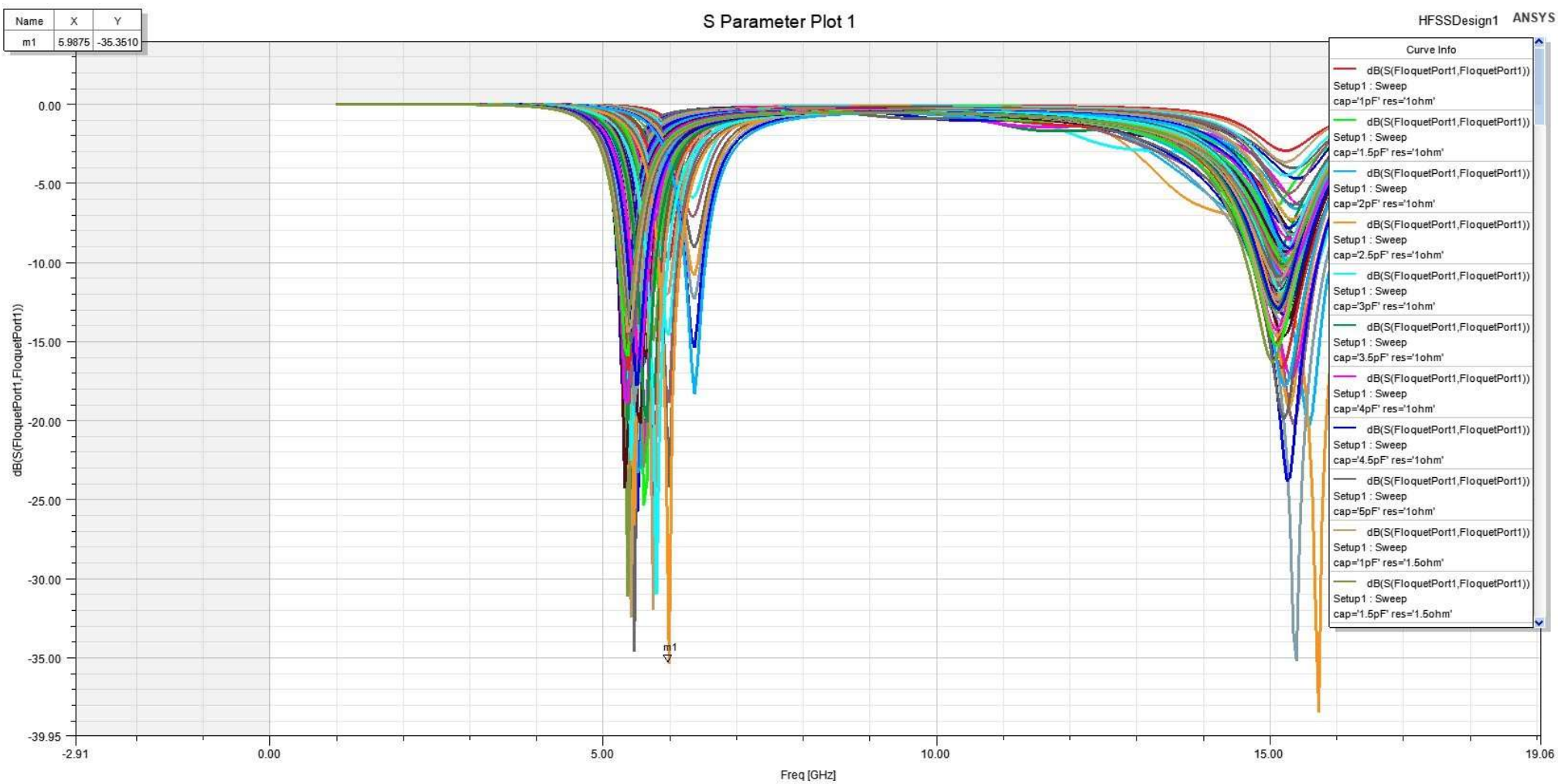
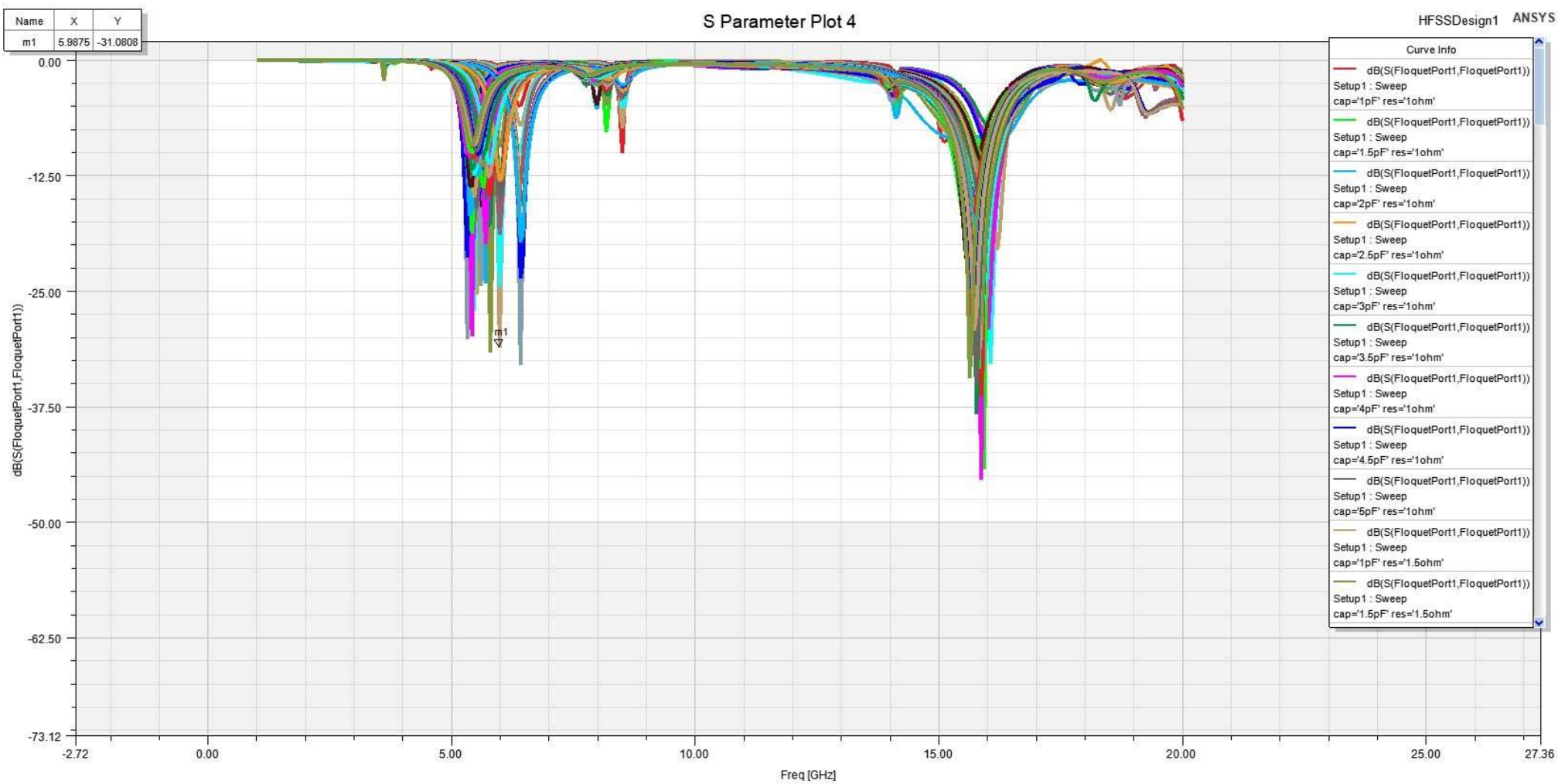
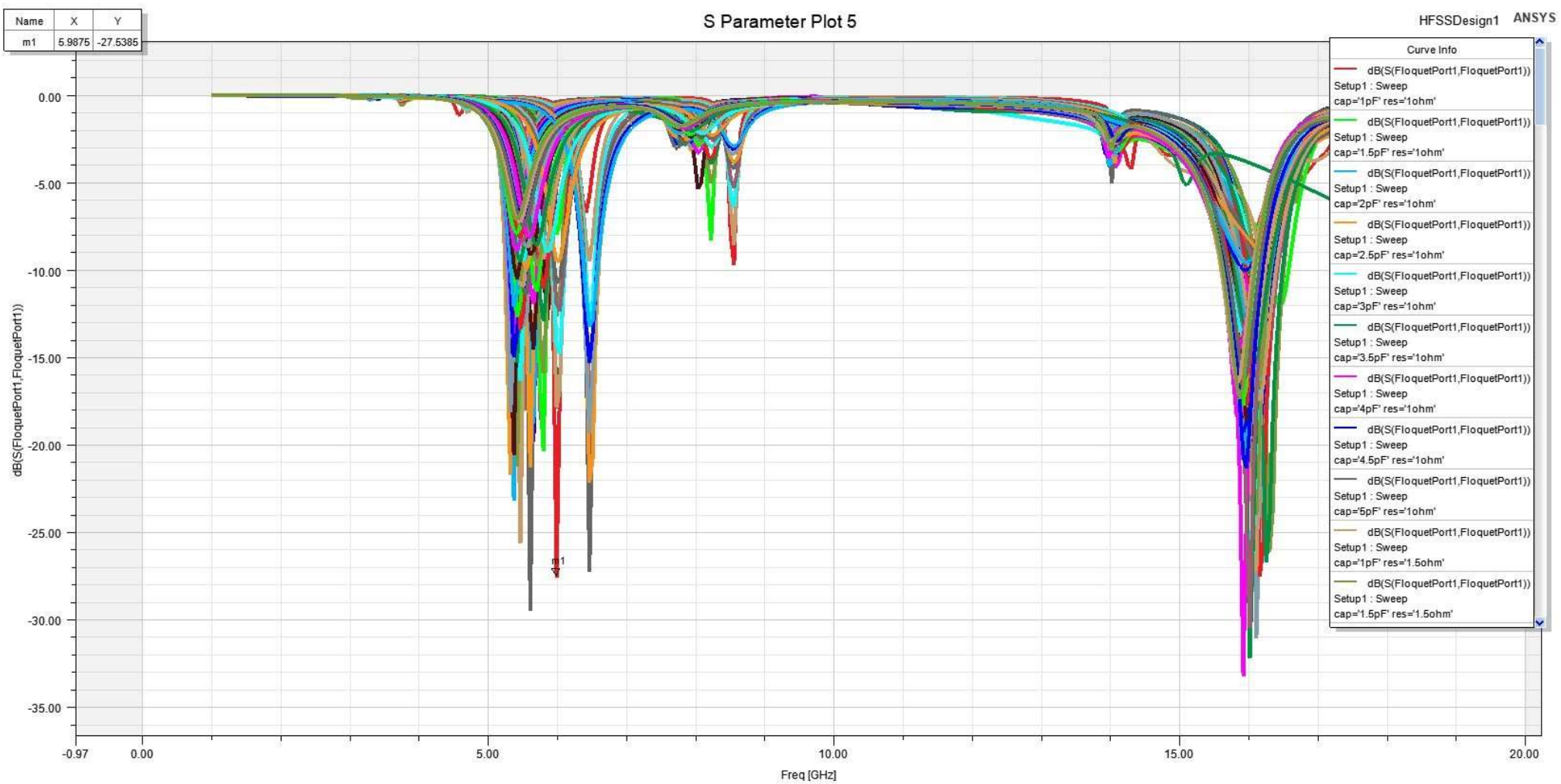
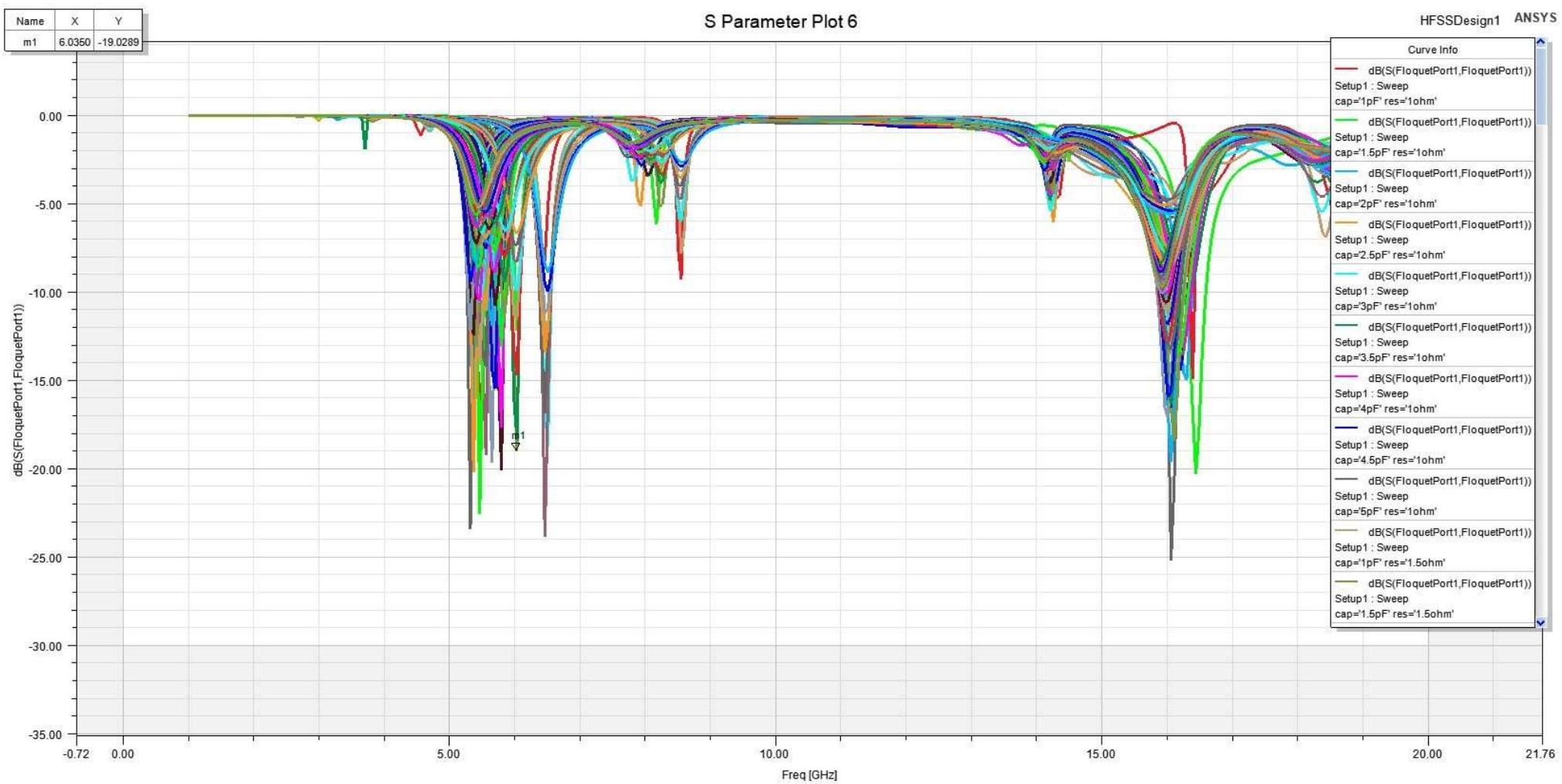
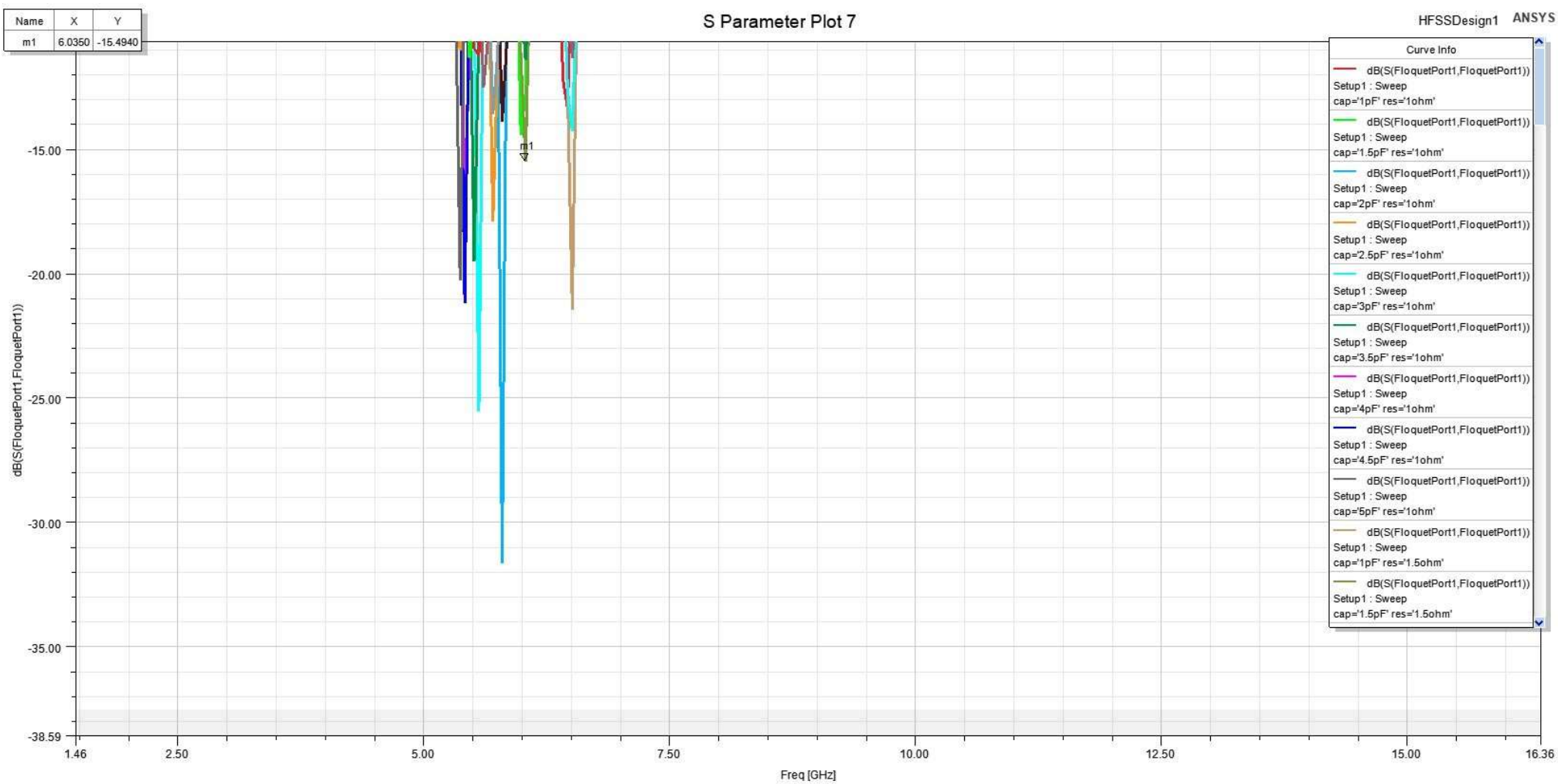
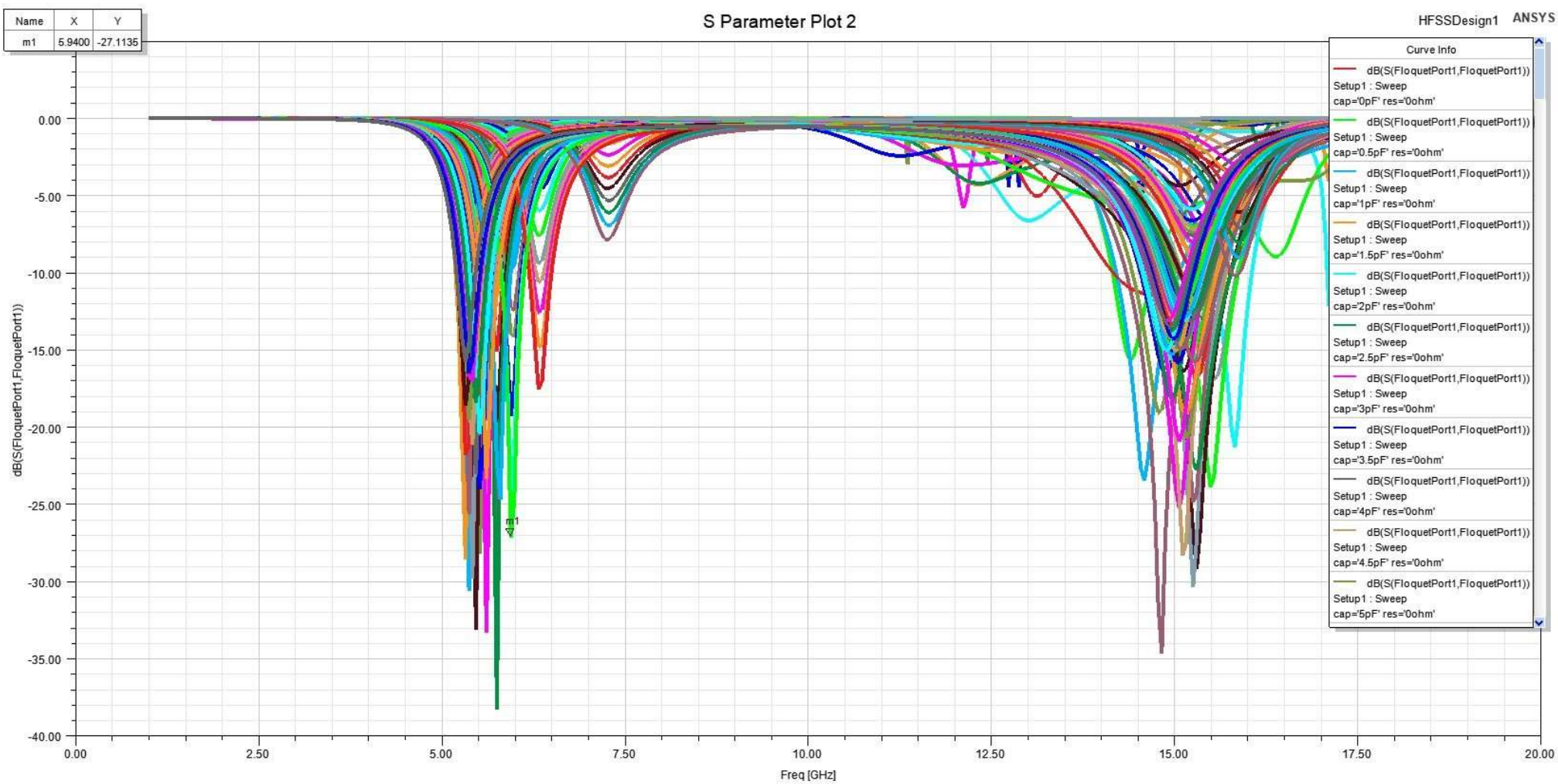

S Parameter Plot 1
HFSSDesign1
ANSYS
Name X Y
m1 5.9875 -35.3510
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-39.95
m1
-2.91
0.00
5.00
10.00
15.00
19.06
Freq [GHz]

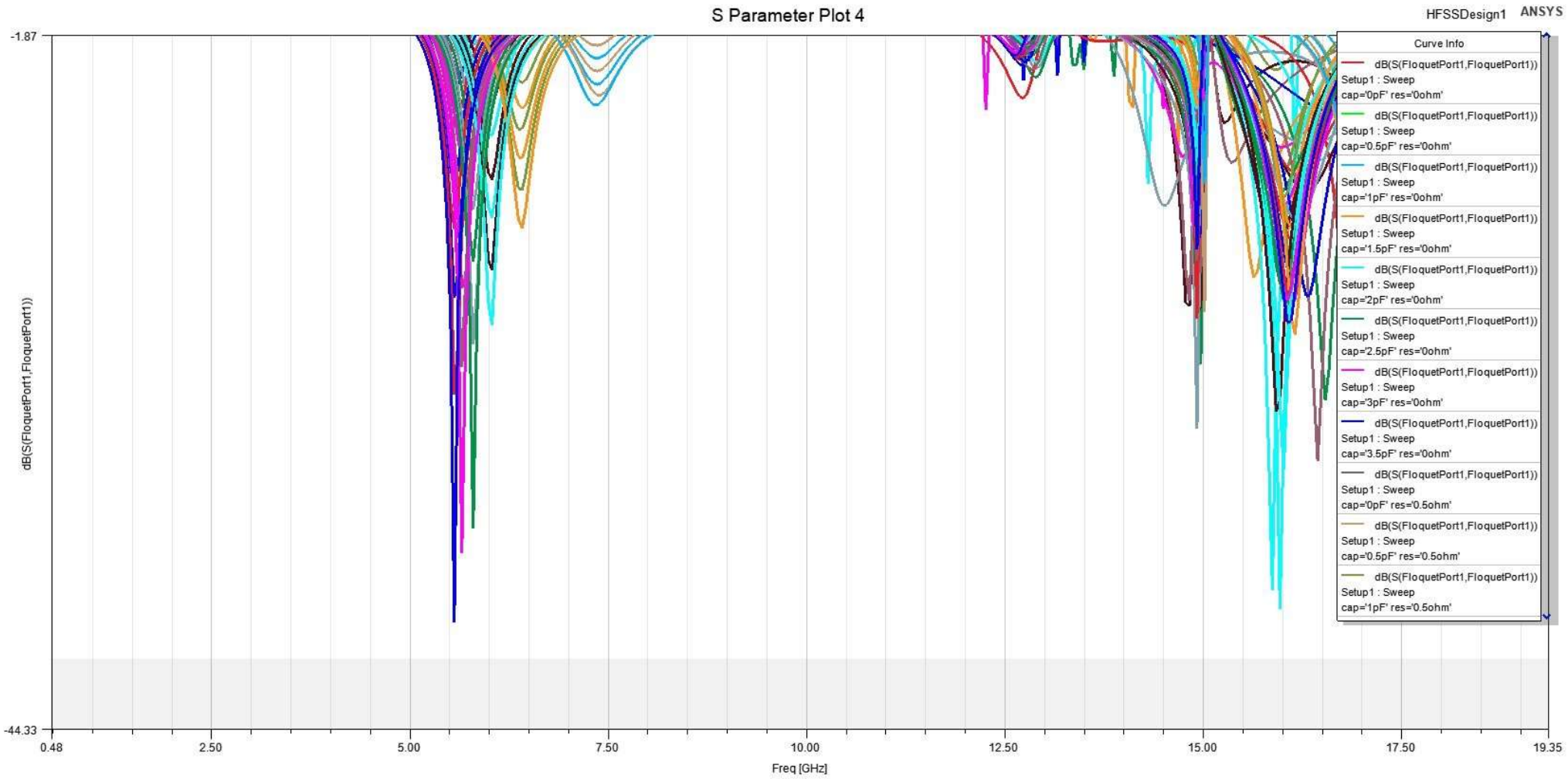

S Parameter Plot 4
HFSSDesign1
ANSYS
Name X Y
m1 5.9875 -31.0808
m1
dB(S(FloquetPort1,FloquetPort1))
0.00
-12.50
-25.00
-37.50
-50.00
-62.50
-73.12
-2.72
0.00
5.00
10.00
15.00
20.00
25.00
27.36
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1.5ohm'

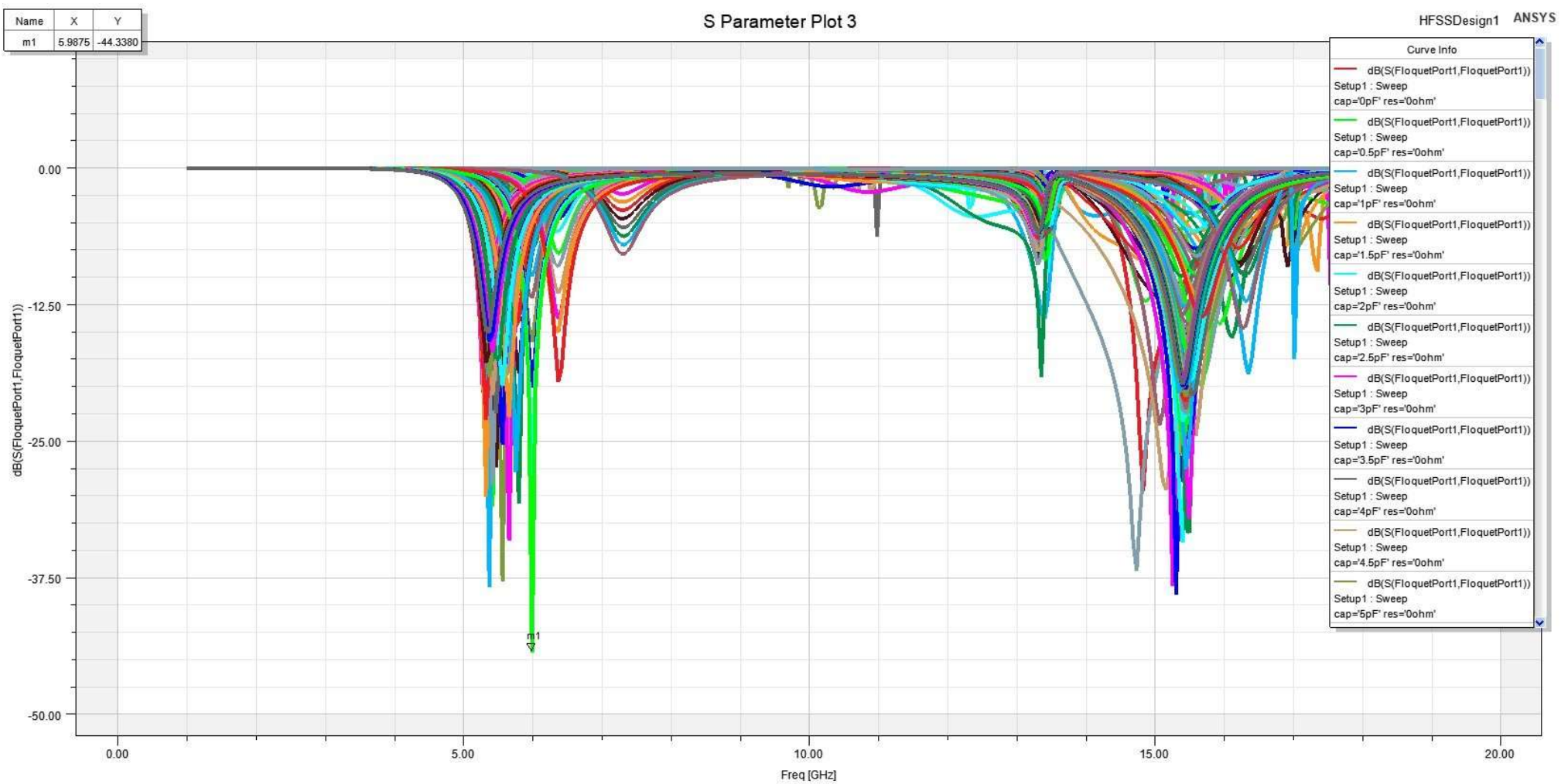

S Parameter Plot 5
HFSSDesign1
ANSYS
Name X Y
m1 5.9875 -27.5385
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
m1
-0.97
0.00
5.00
10.00
15.00
20.00
Freq [GHz]

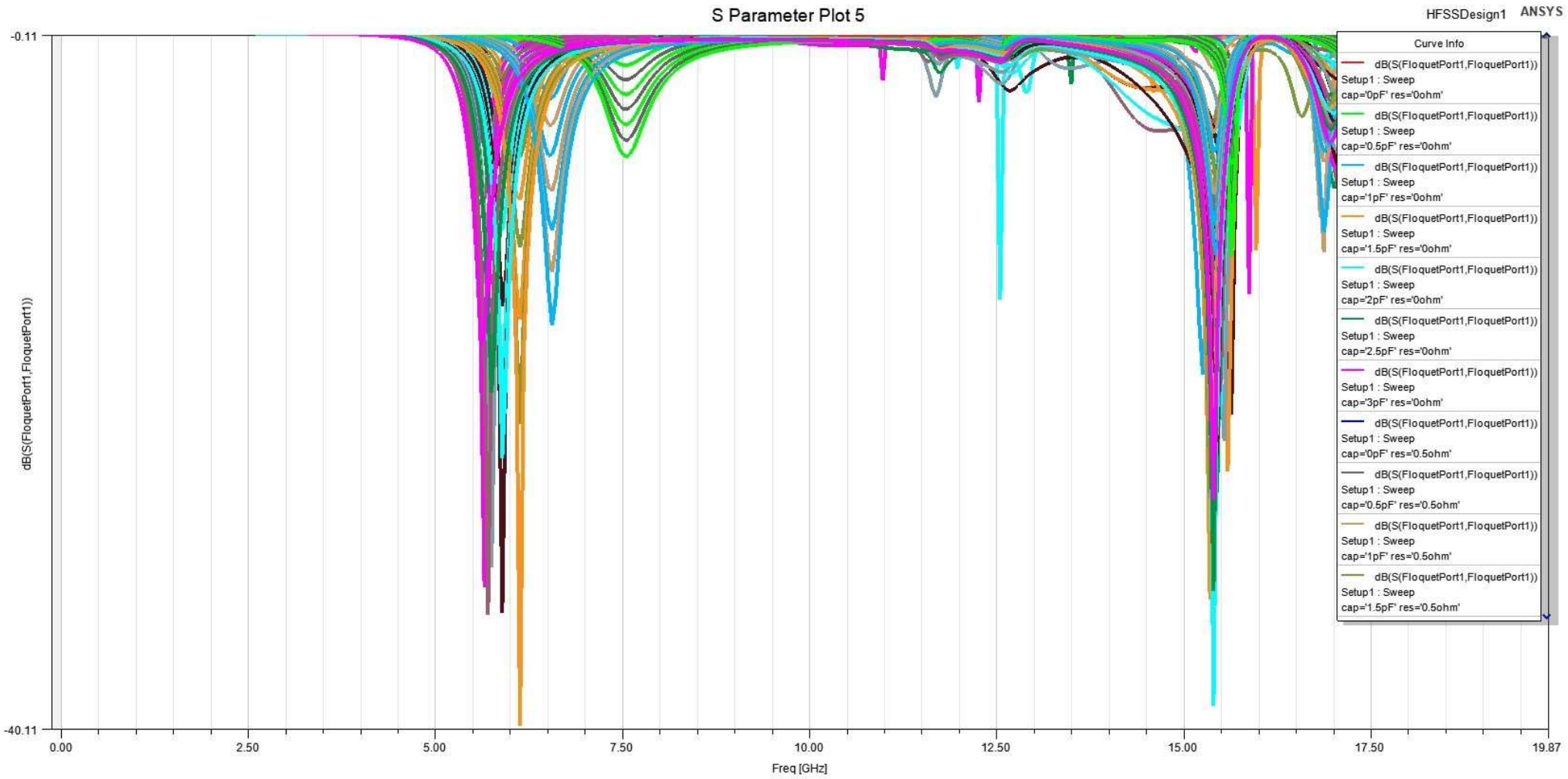

S Parameter Plot 6
HFSSDesign1
ANSYS
Name X Y
m1 6.0350 -19.0289
m1
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-0.72
0.00
5.00
10.00
15.00
20.00
21.76
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1.5ohm'

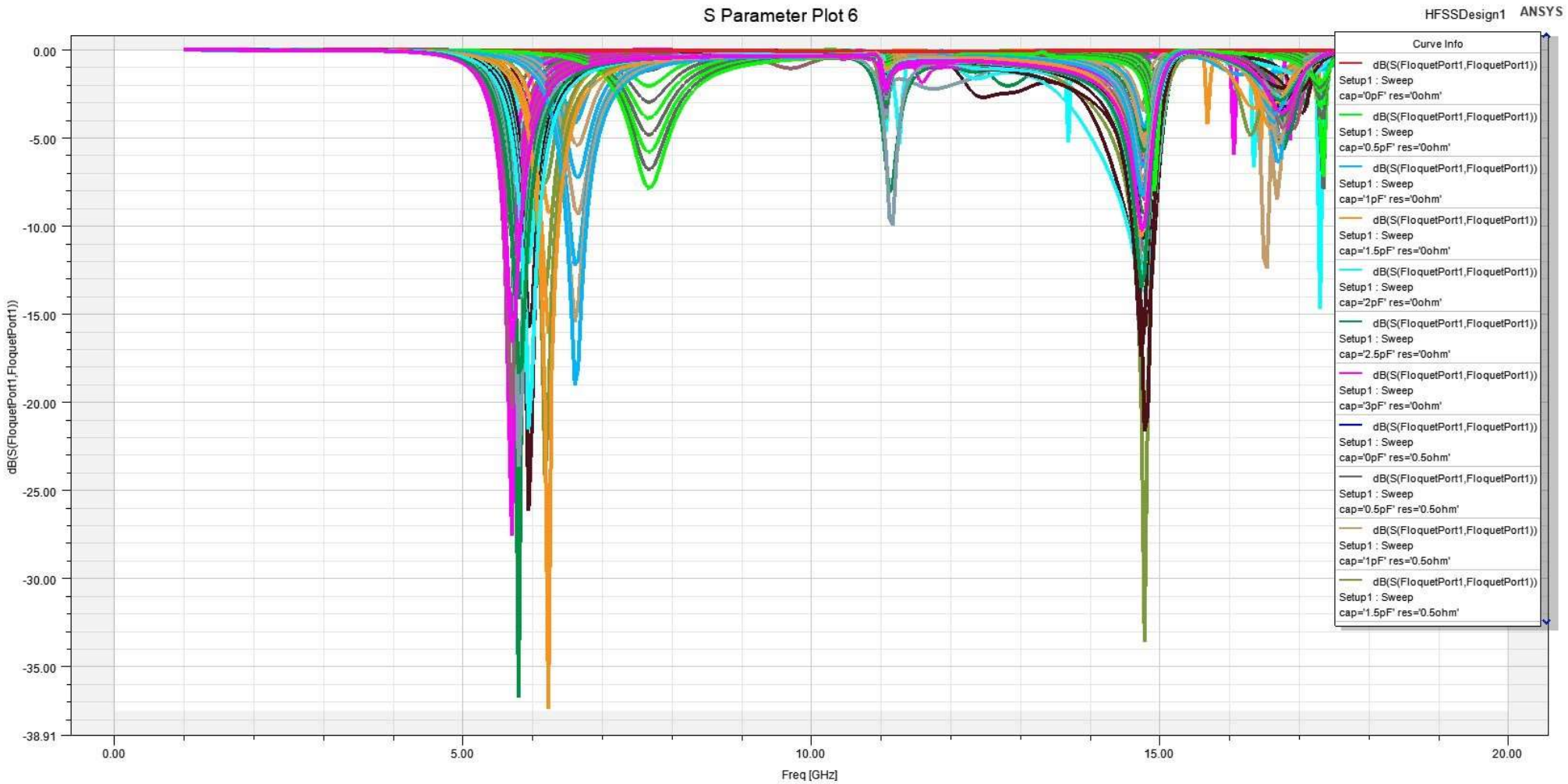

S Parameter Plot 7
HFSSDesign1
ANSYS
Name X Y
m1 6.0350 -15.4940
m1
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='1.5ohm'
dB(S(FloquetPort1,FloquetPort1))
-15.00
-20.00
-25.00
-30.00
-35.00
-38.59
1.46
2.50
5.00
7.50
10.00
12.50
15.00
16.36
Freq [GHz]

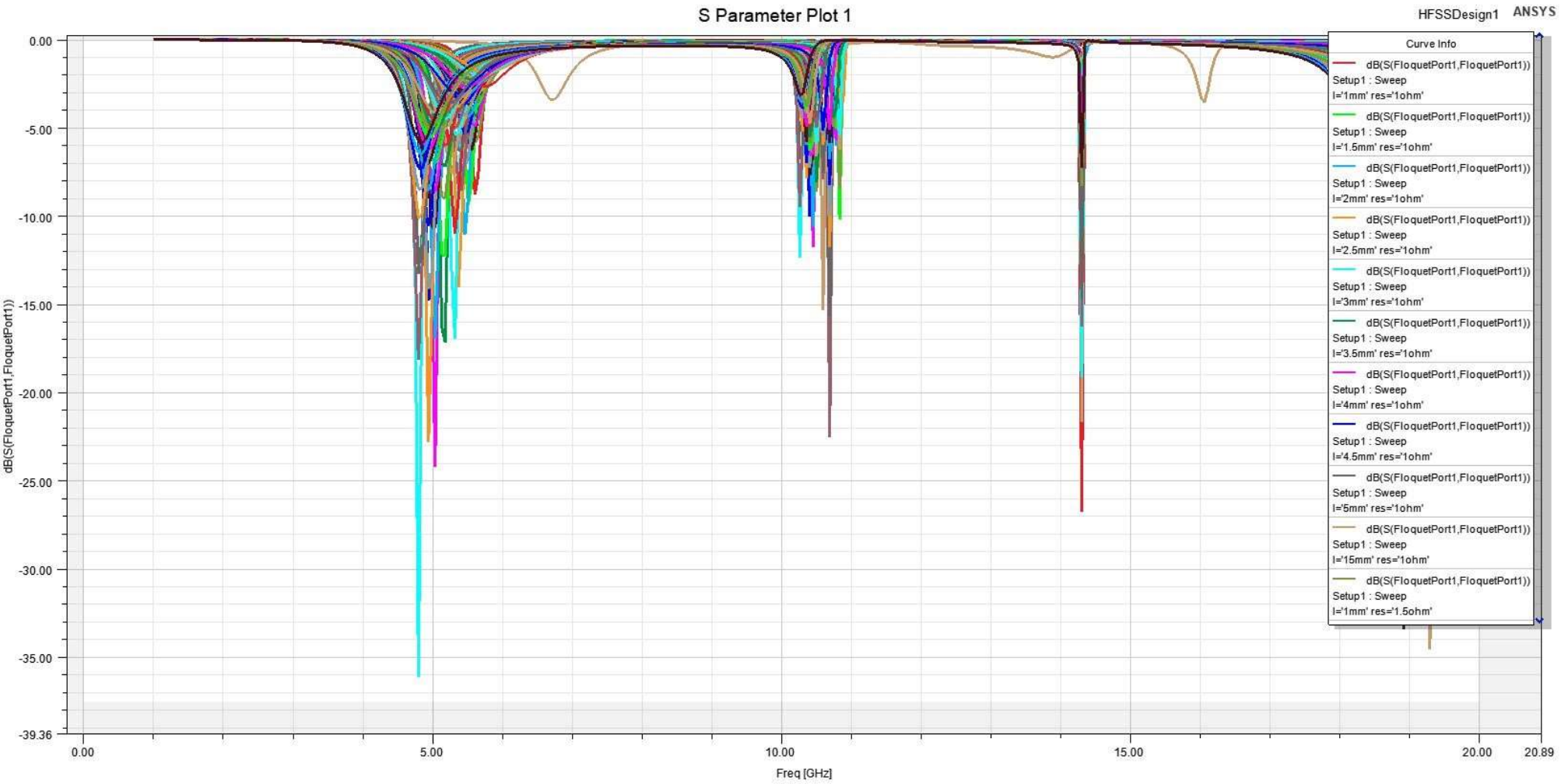

S Parameter Plot 2
HFSSDesign1
ANSYS
Name X Y
m1 5.9400 -27.1135
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0ohm'
cap='0.5pF' res='0ohm'
cap='1pF' res='0ohm'
cap='1.5pF' res='0ohm'
cap='2pF' res='0ohm'
cap='2.5pF' res='0ohm'
cap='3pF' res='0ohm'
cap='3.5pF' res='0ohm'
cap='4pF' res='0ohm'
cap='4.5pF' res='0ohm'
cap='5pF' res='0ohm'
m1
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-40.00
0.00
2.50
5.00
7.50
10.00
12.50
15.00
17.50
20.00
Freq [GHz]


S Parameter Plot 4
HFSSDesign1
ANSYS
-1.87
-44.33
dB(S(FloquetPort1,FloquetPort1))
0.48
2.50
5.00
7.50
10.00
12.50
15.00
17.50
19.35
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0.5ohm'

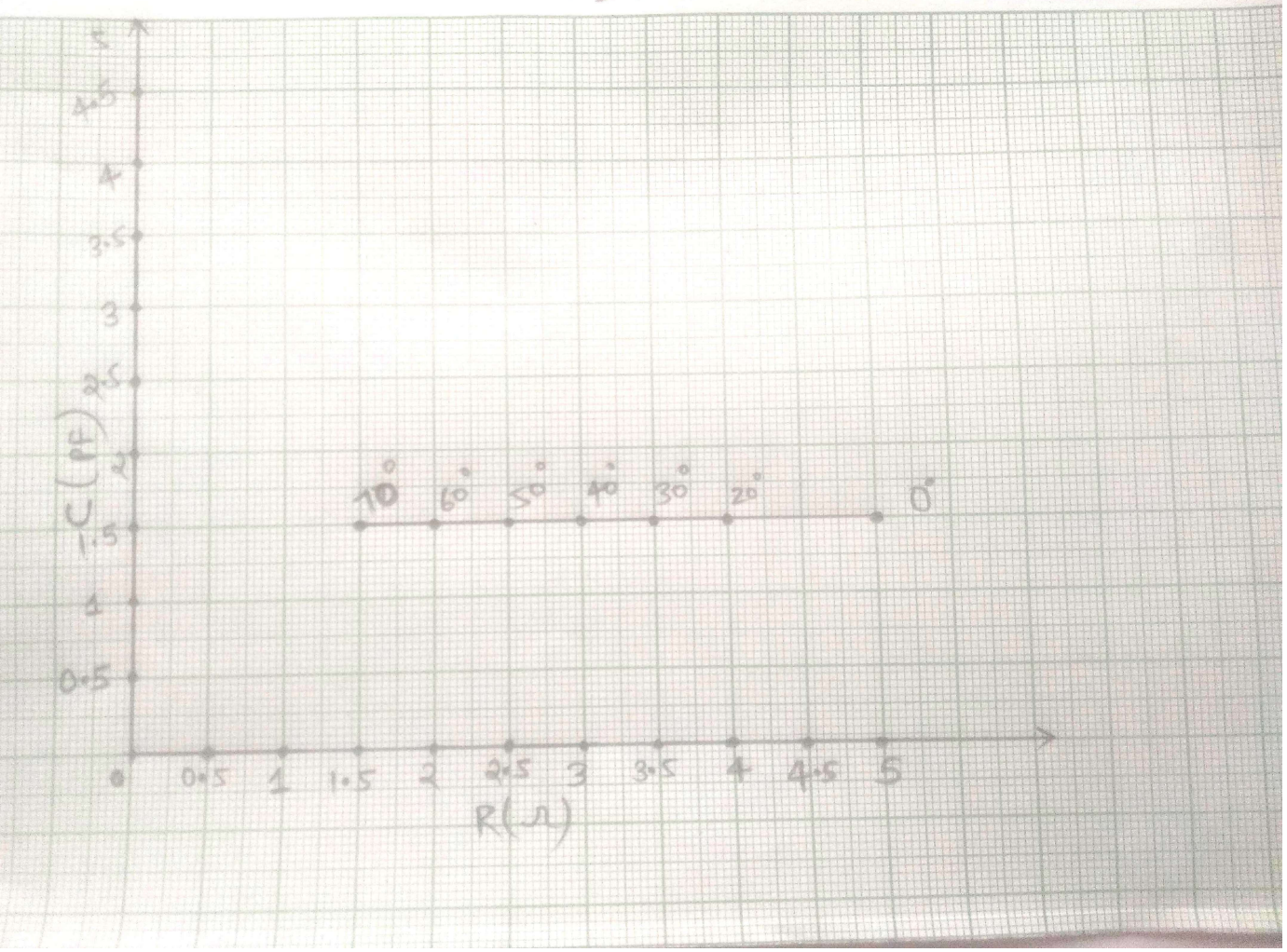
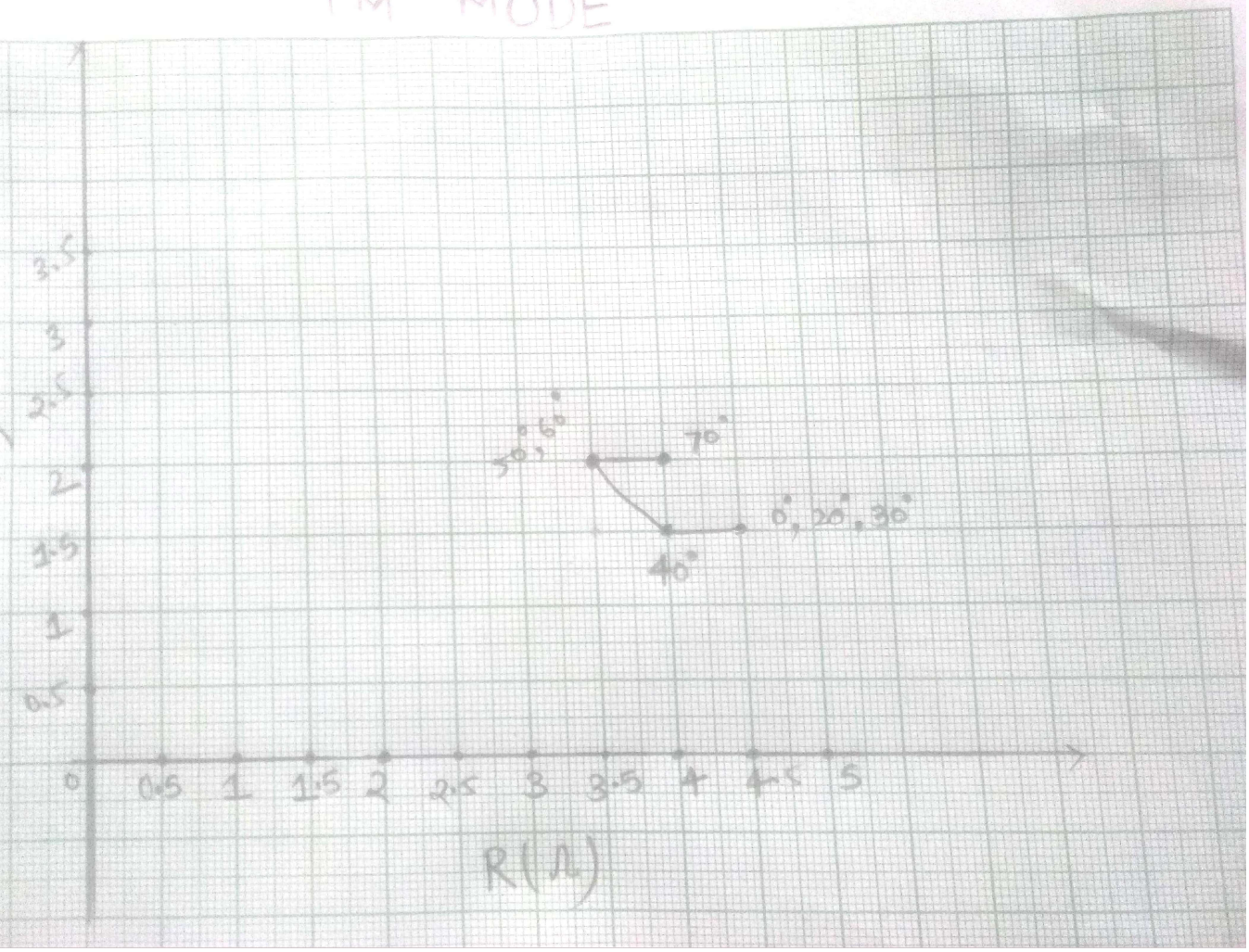

S Parameter Plot 3
HFSSDesign1
ANSYS
Name X Y
m1 5.9875 -44.3380
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='4.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
0.00
-12.50
-25.00
-37.50
-50.00
m1
0.00
5.00
10.00
15.00
20.00
Freq [GHz]


S Parameter Plot 5
HFSSDesign1
ANSYS
-0.11
-40.11
dB(S(FloquetPort1,FloquetPort1))
0.00
2.50
5.00
7.50
10.00
12.50
15.00
17.50
19.87
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0.5ohm'


S Parameter Plot 6
HFSSDesign1
ANSYS
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-38.91
0.00
5.00
10.00
15.00
20.00
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='2.5pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='3pF' res='0ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='0.5pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1pF' res='0.5ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
cap='1.5pF' res='0.5ohm'


S Parameter Plot 1
HFSSDesign1
ANSYS
dB(S(FloquetPort1,FloquetPort1))
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-39.36
0.00
5.00
10.00
15.00
20.00
20.89
Freq [GHz]
Curve Info
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='1mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='1.5mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='2mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='2.5mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='3mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='3.5mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='4mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='4.5mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='5mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='15mm' res='1ohm'
dB(S(FloquetPort1,FloquetPort1))
Setup1 : Sweep
l='1mm' res='1.5ohm'

TE MODE



TM MODE