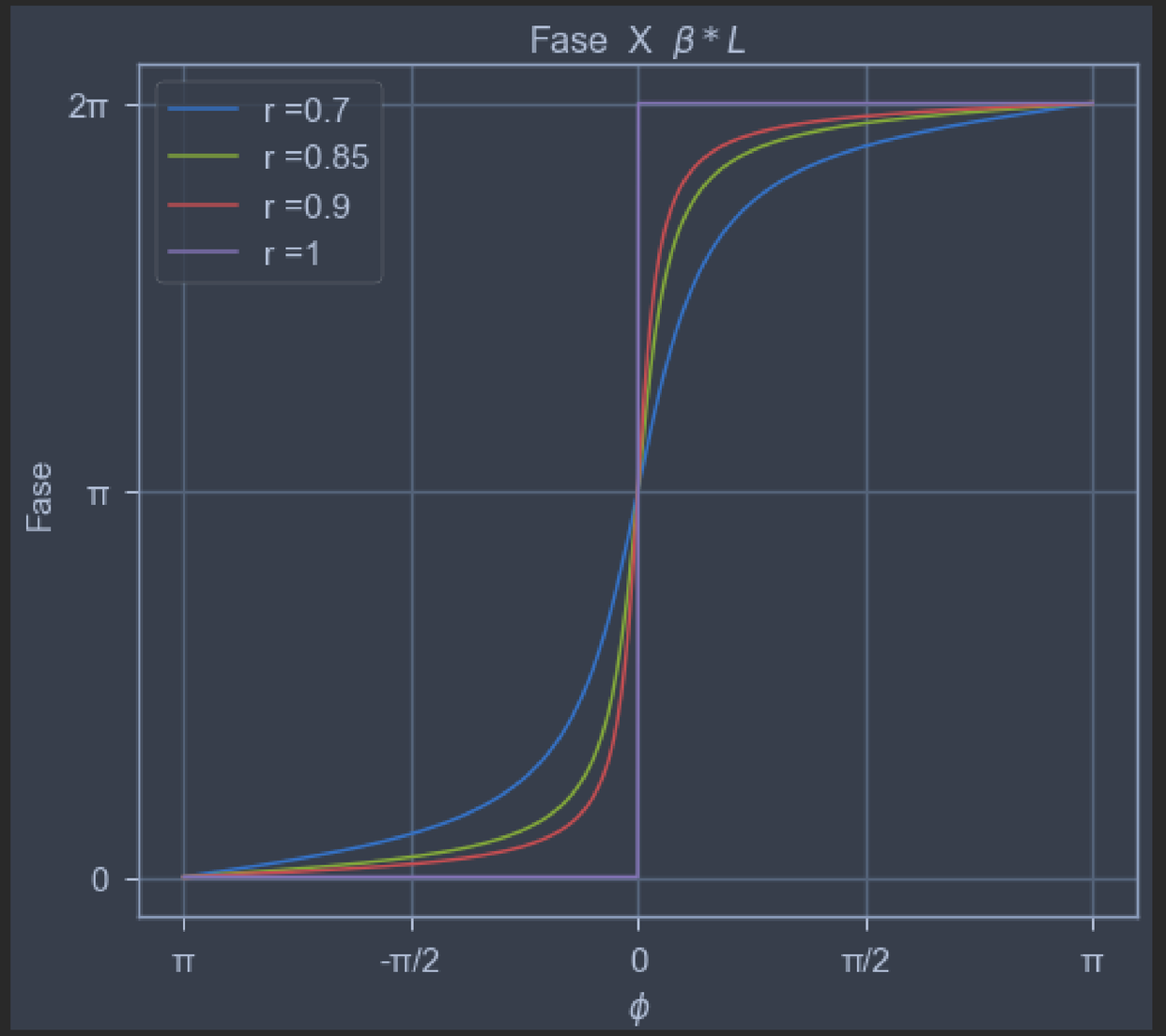
DESIGN
ANEL DE RESSONANCIA

SEMANA 1 E 2

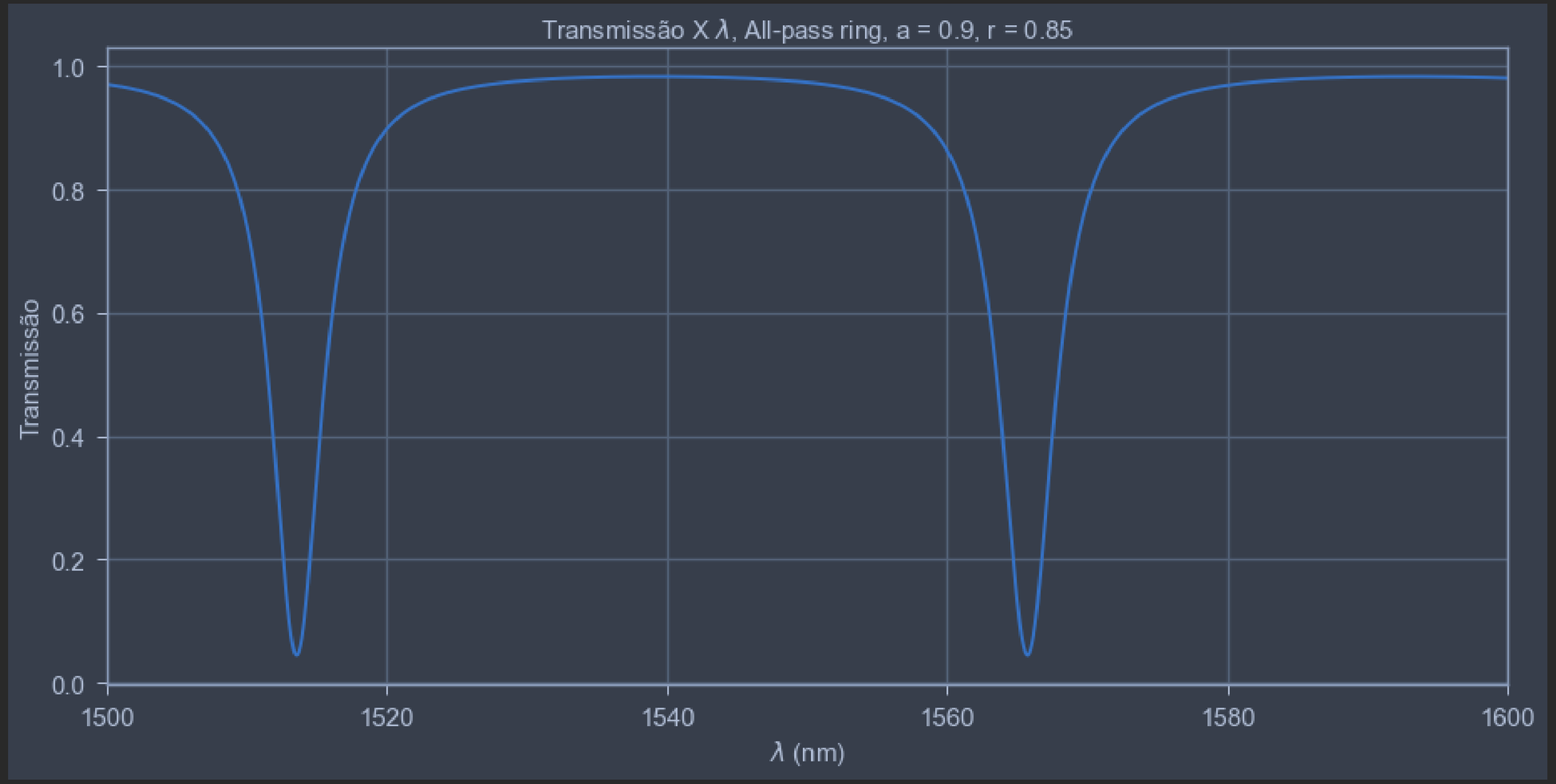
ESTUDO DE REFERENCIAS

GRÁFICOS TEÓRICOS



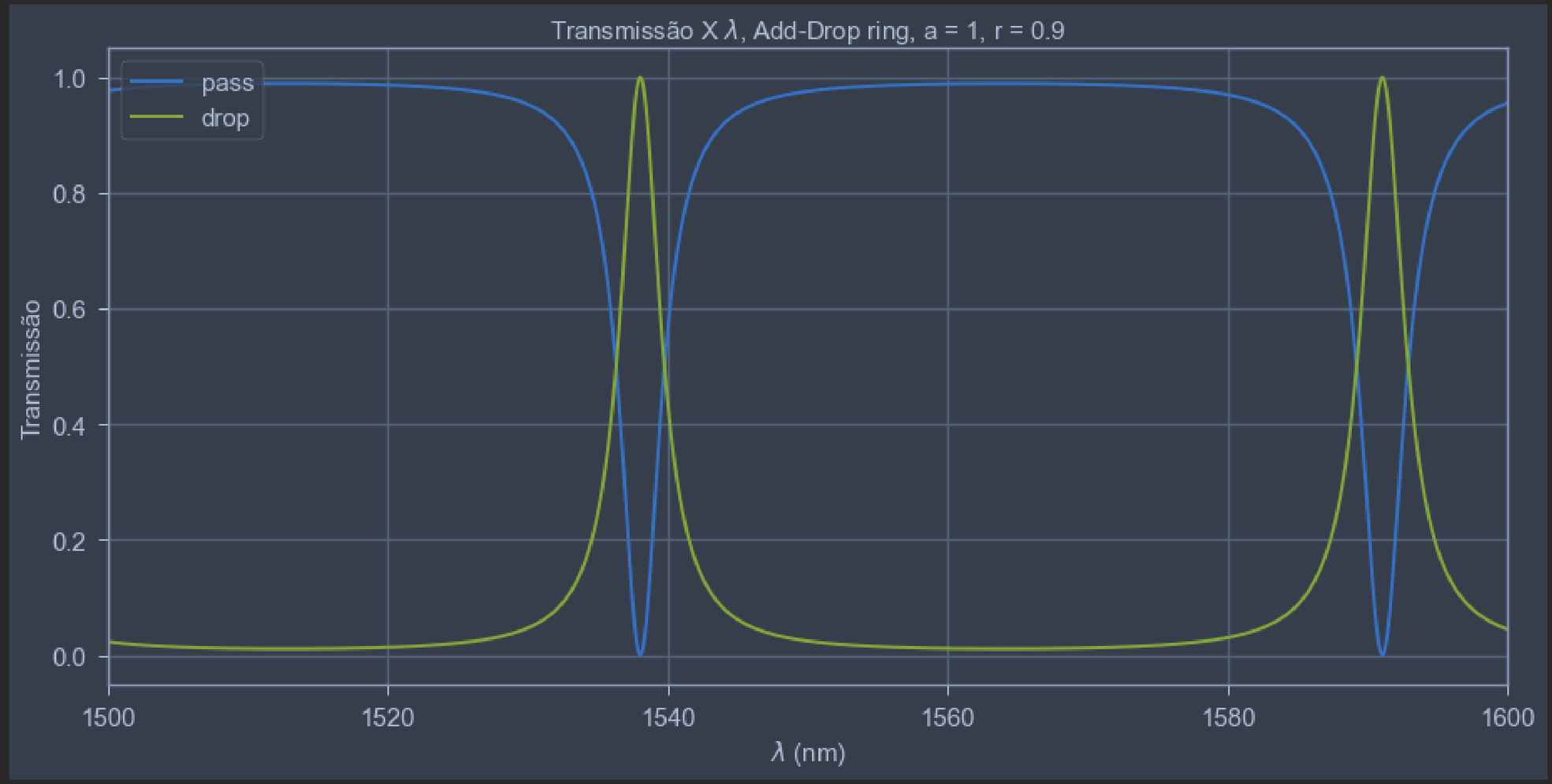
GRÁFICOS TEÓRICOS

Transmissão All pass ring



GRÁFICOS TEÓRICOS

Transmissão Add-drop ring



DESIGN DE UM ANEL DE RESSONÂNCIA

Especificações

FSR = 27.7 nm

MWHW = 0.88 nm

SOI in SiO2

Guia: 0.45/0.22 um

gap = 150 nm

Valores Teóricos

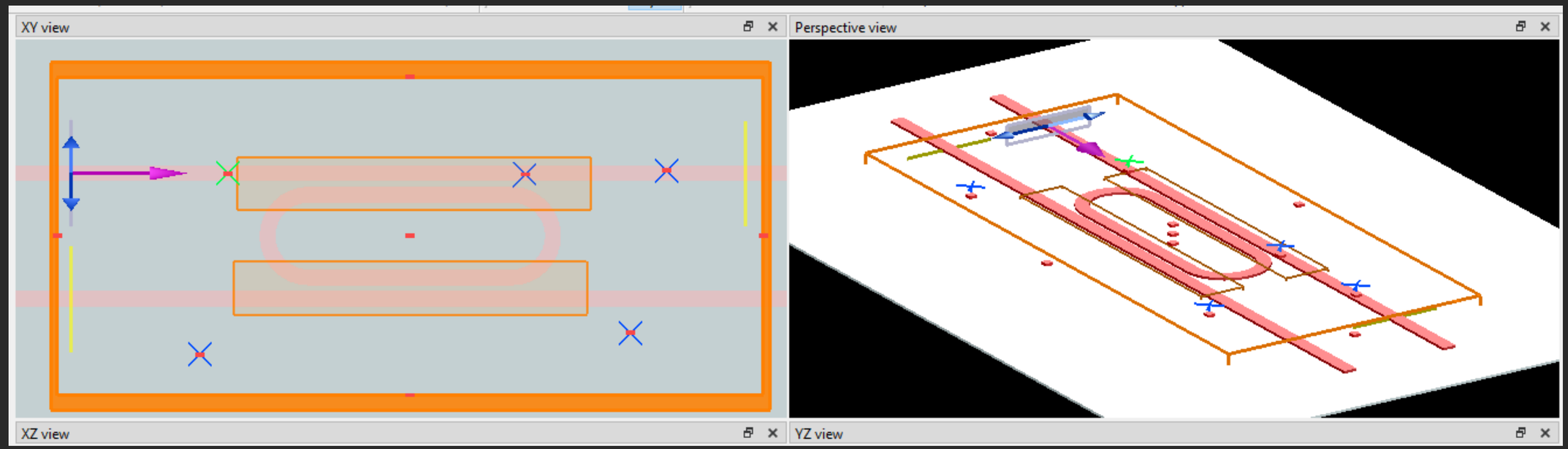
Comprimento total = 18.85 um

Comprimento de acoplamento = 5.74 um

Raio = 1.17 um

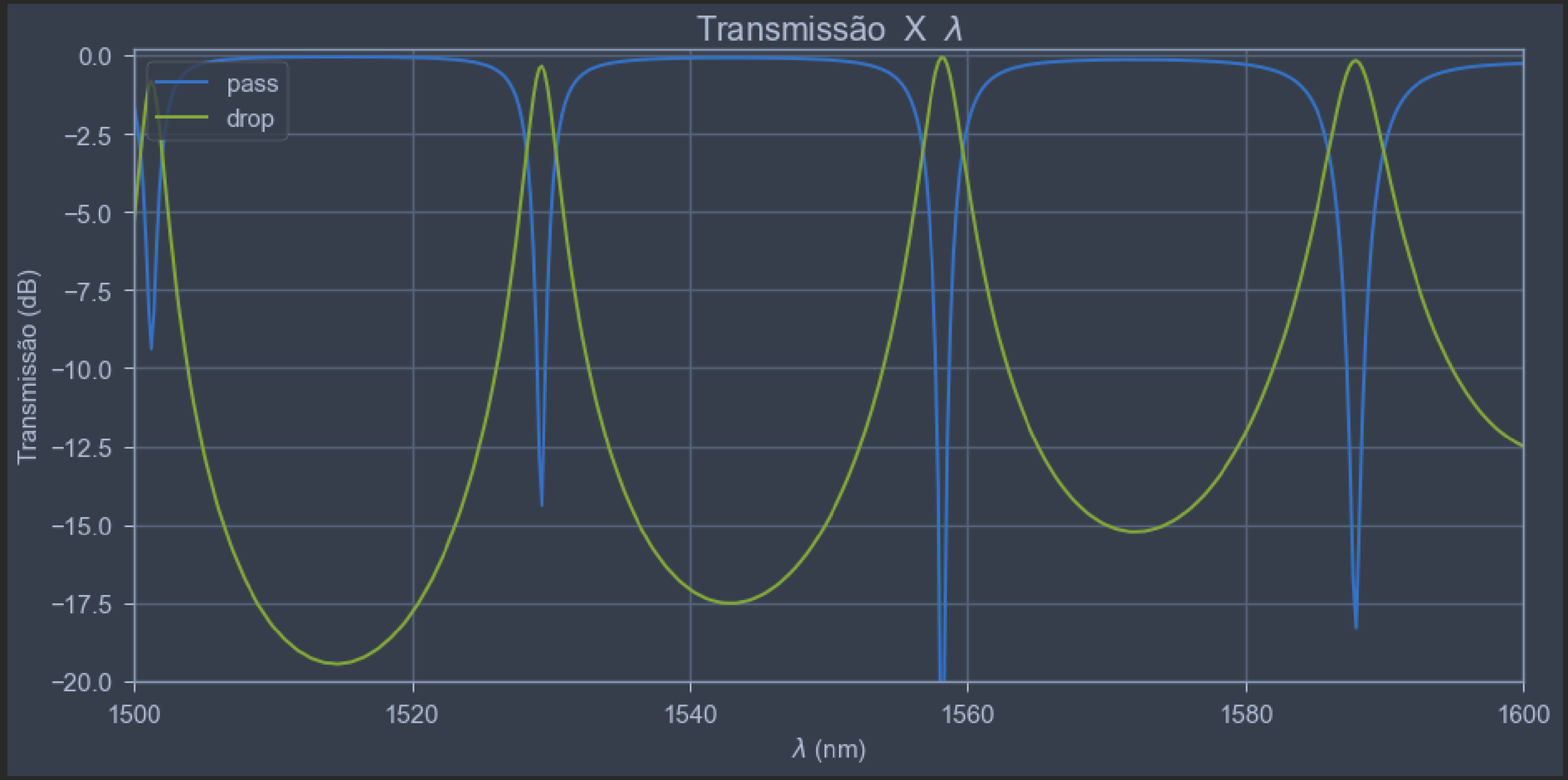
DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

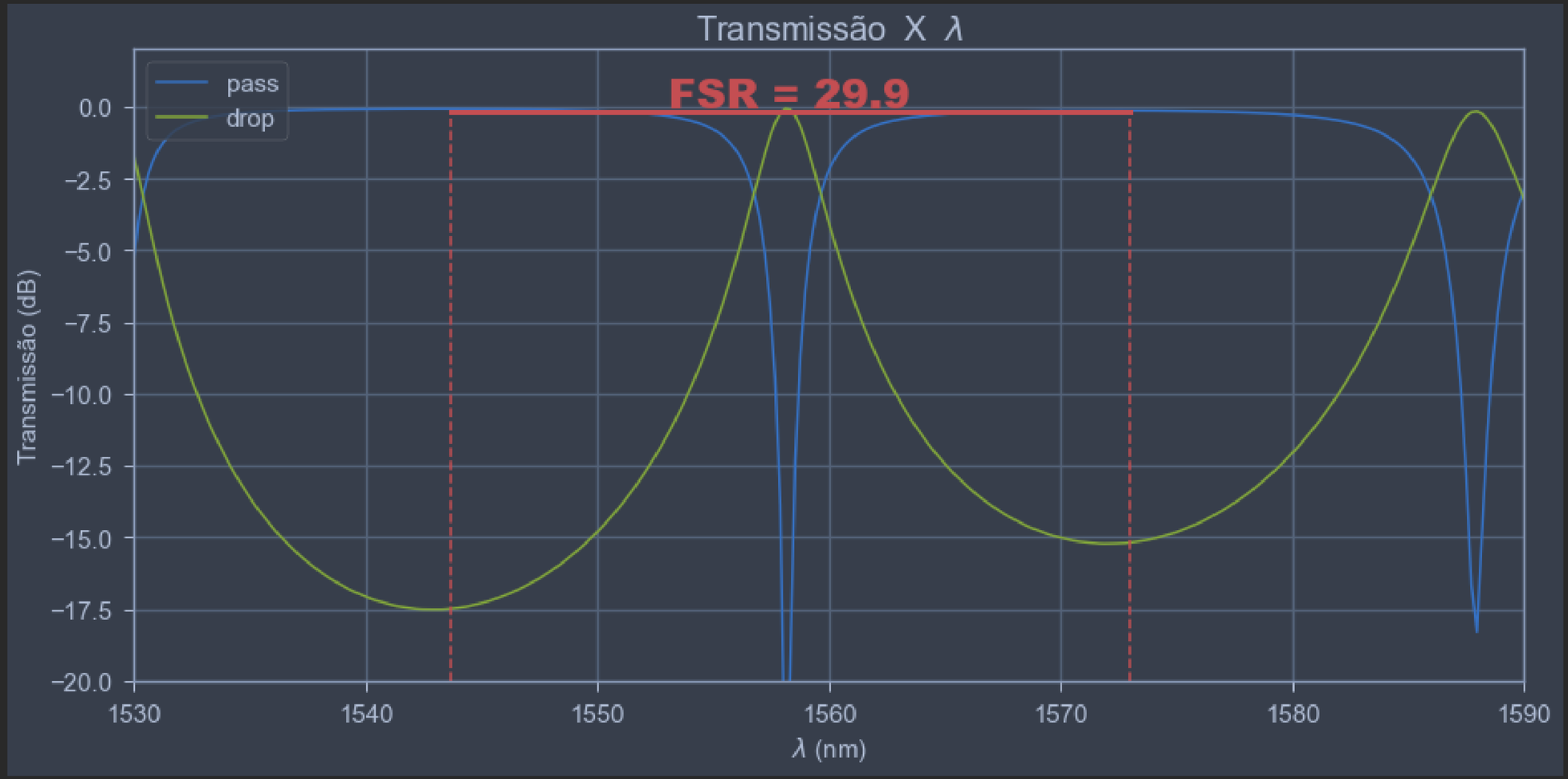


DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

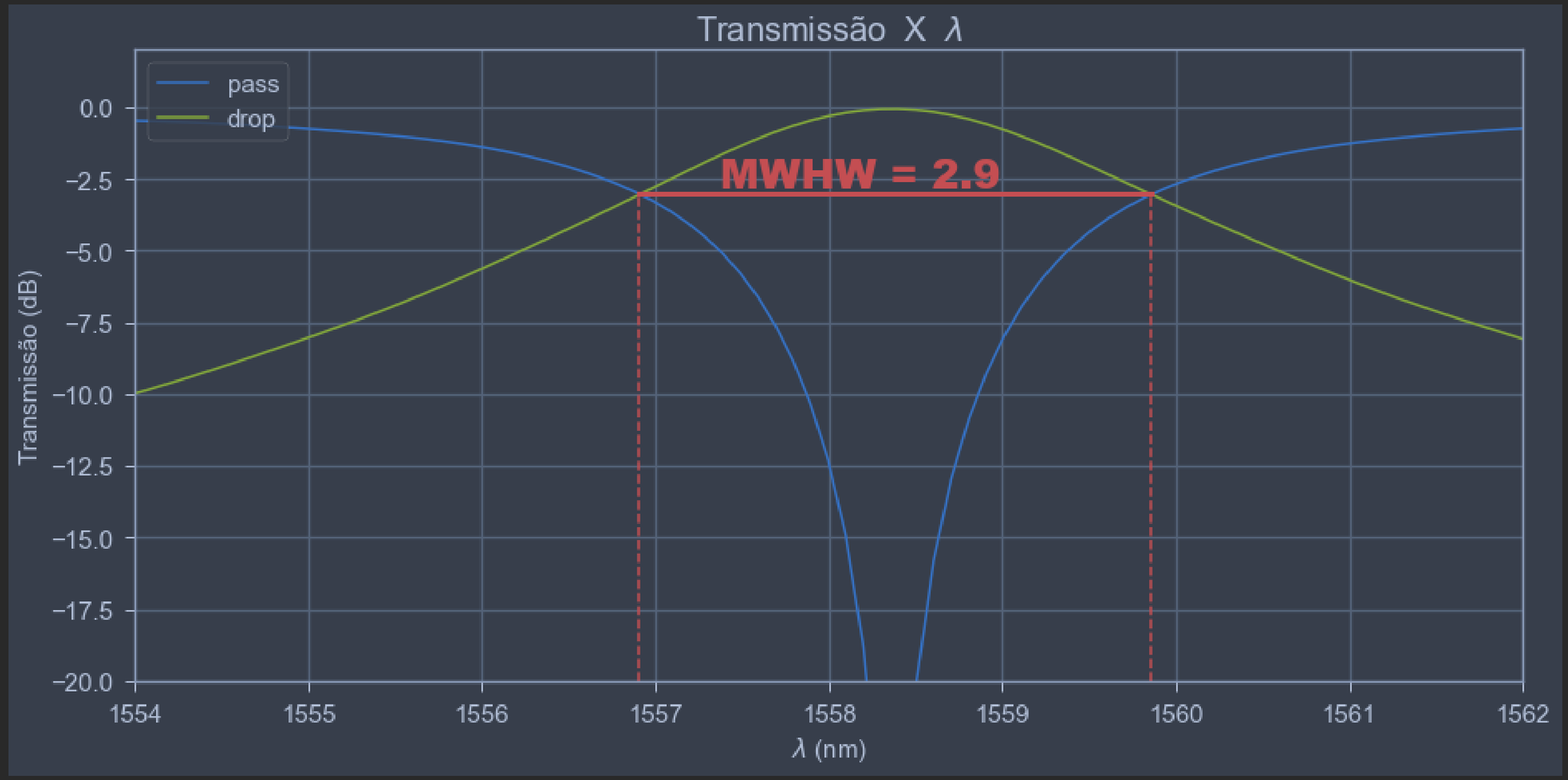
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



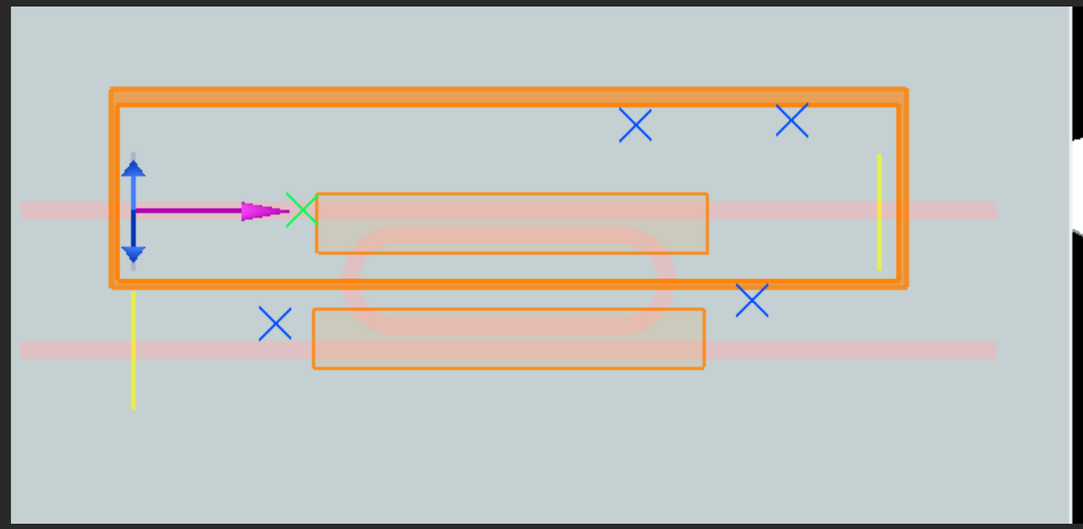
DESIGN DE UM ANEL DE RESSONÂNCIA

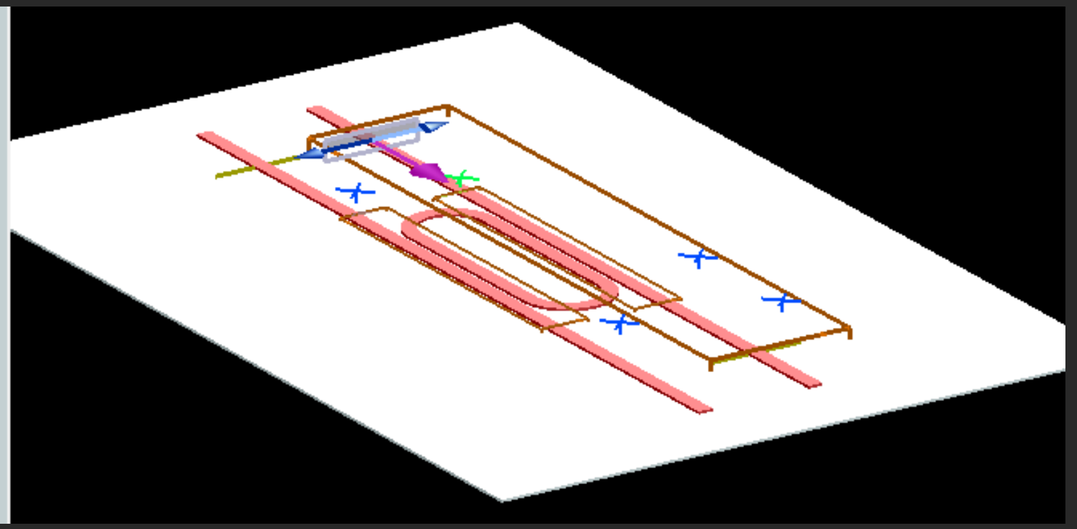
Resultados



DESIGN DE UM ANEL DE RESSONÂNCIA

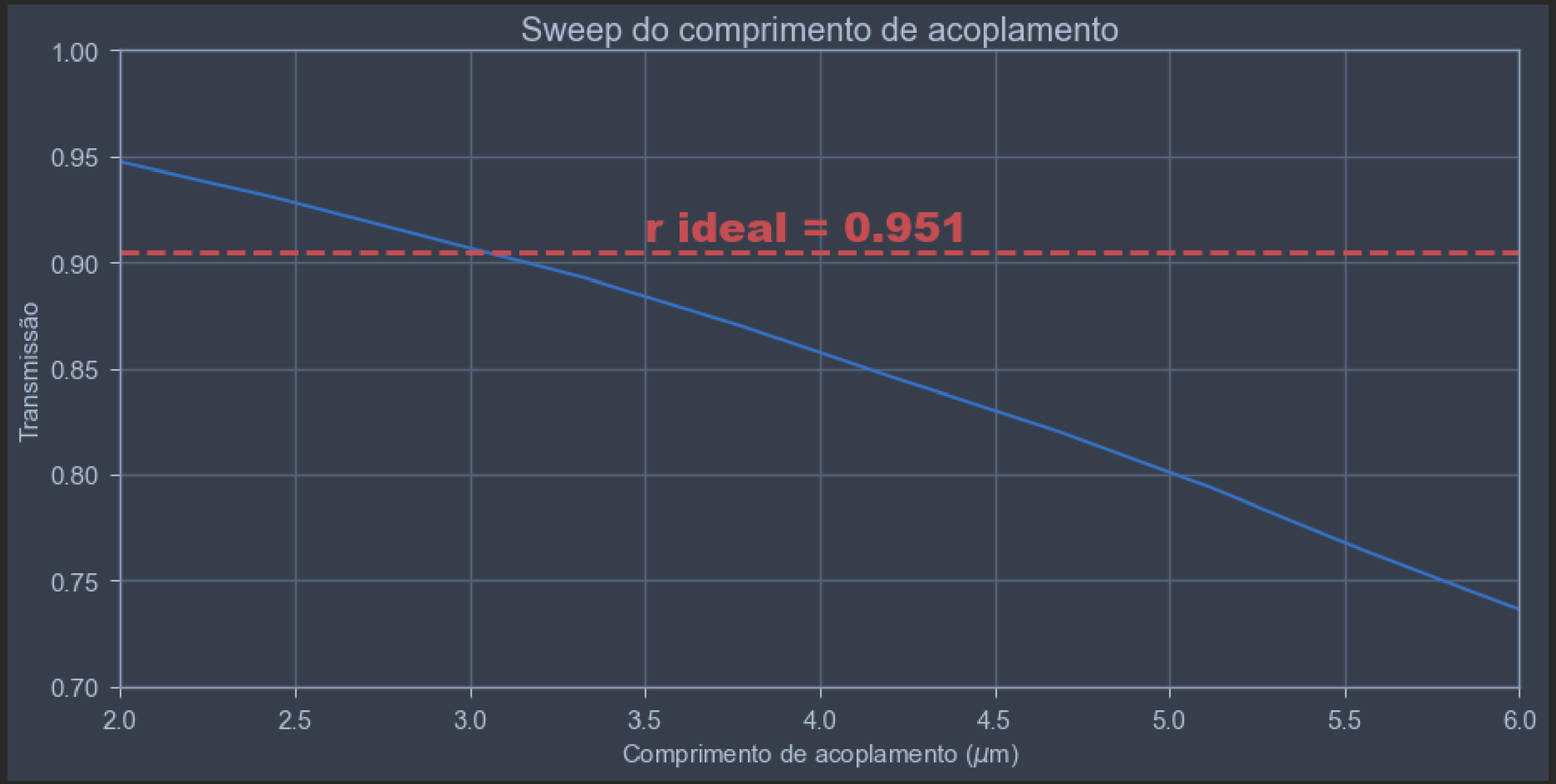
Sweep comprimento de acoplamento





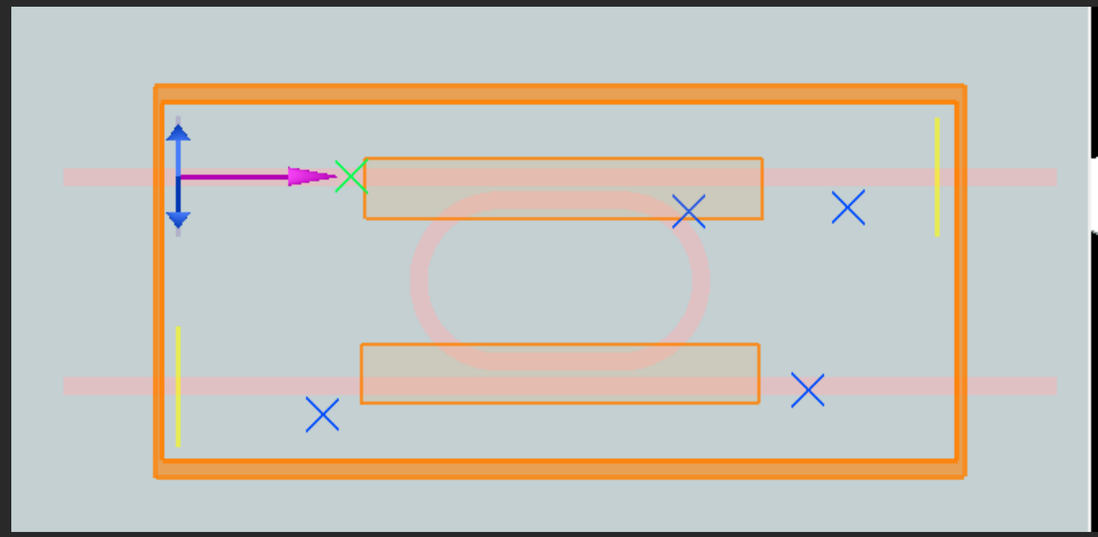
DESIGN DE UM ANEL DE RESSONÂNCIA

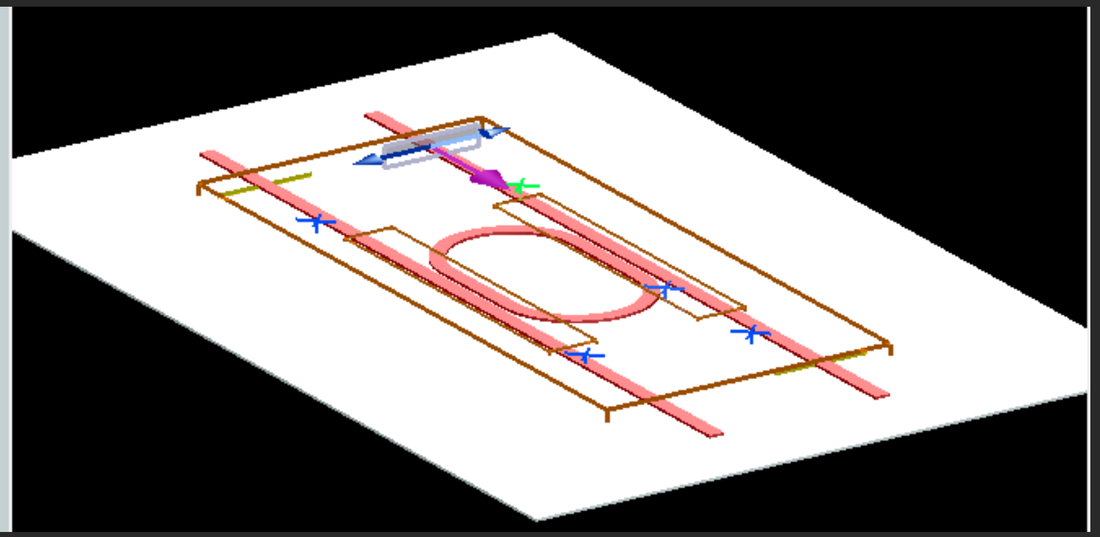
Sweep comprimento de acoplamento



DESIGN DE UM ANEL DE RESSONÂNCIA

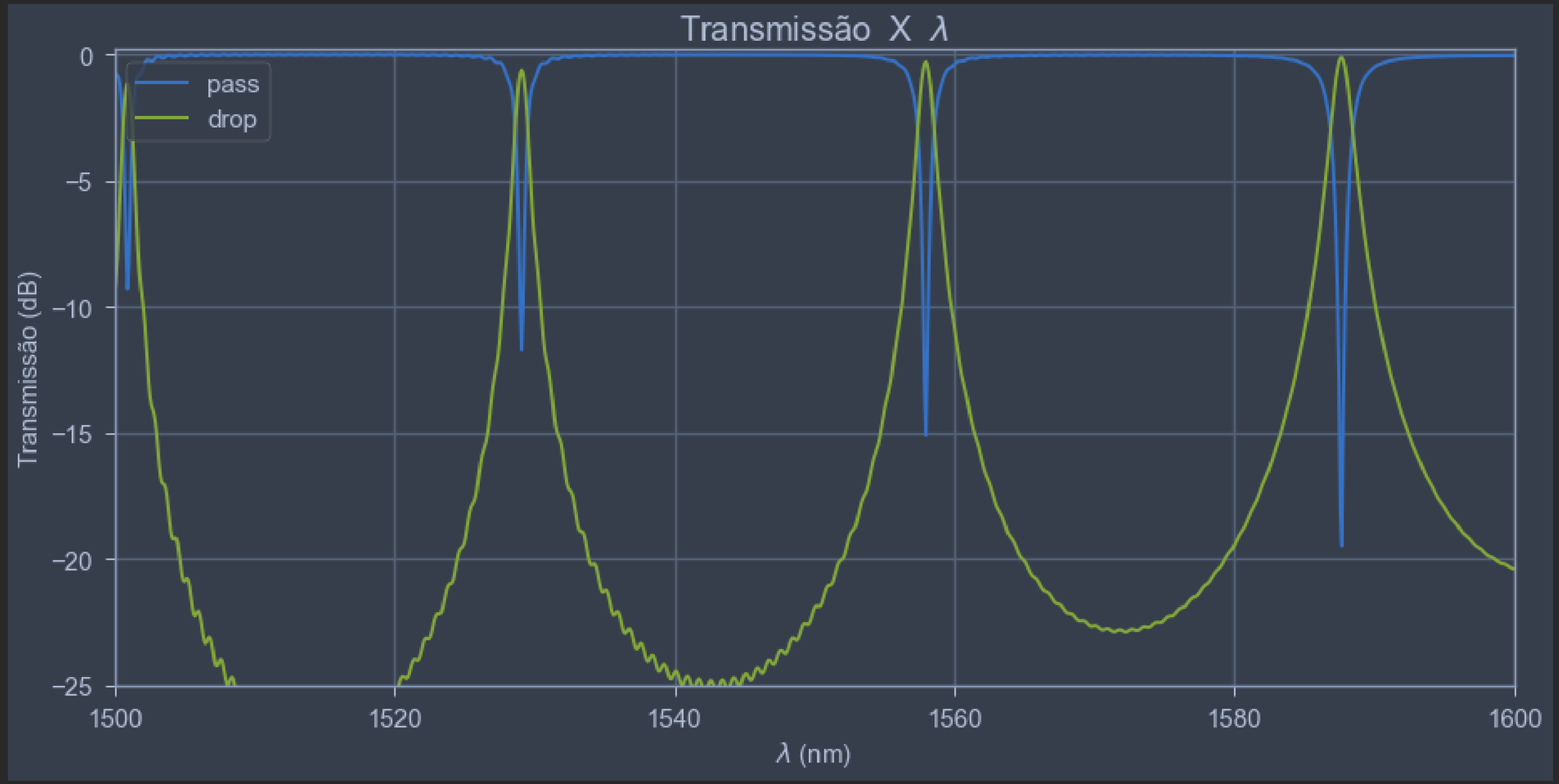
Usando L acoplamento = 3.0.5 um





DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

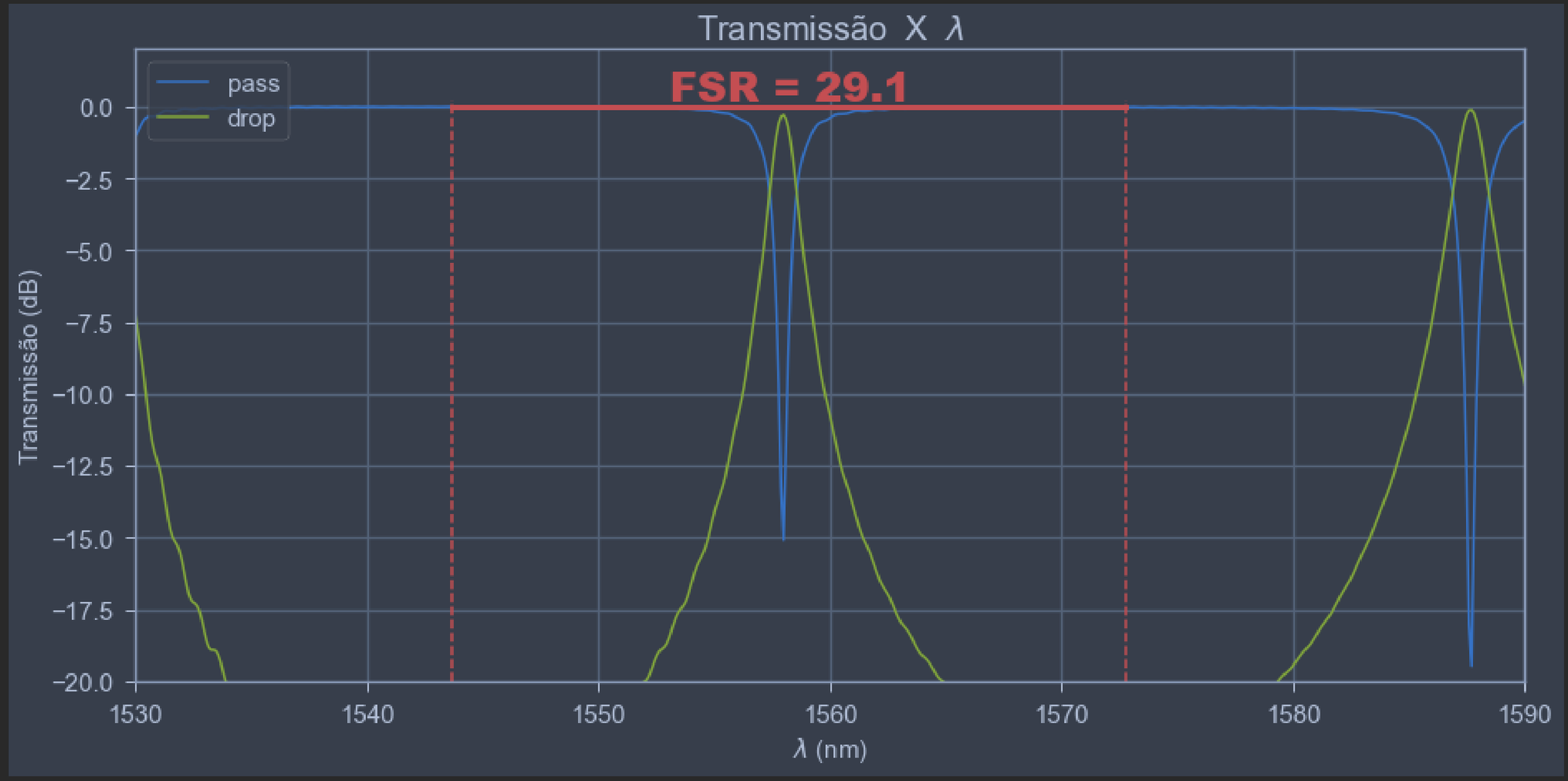


DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

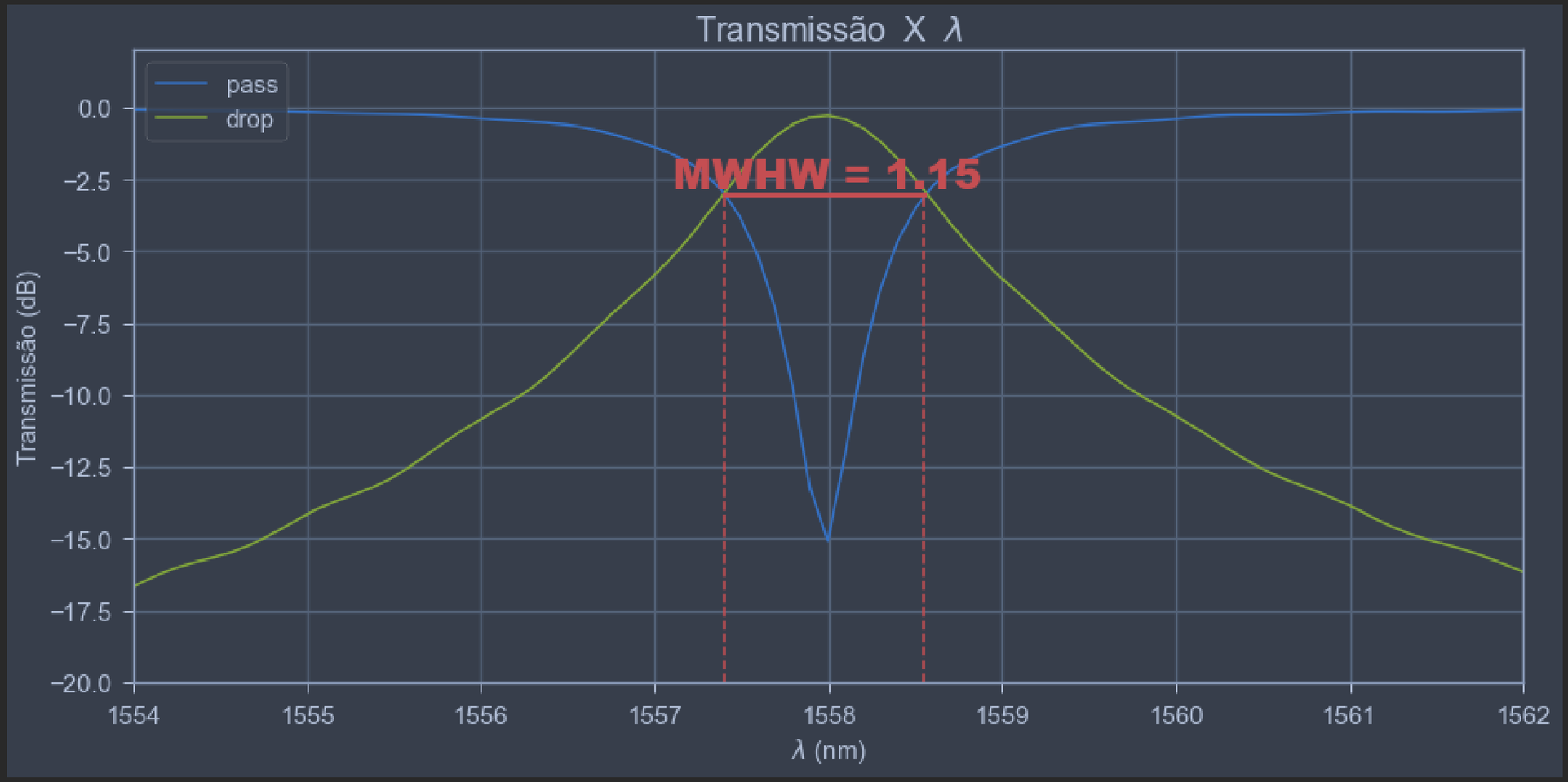
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



SEMANA 3

DESIGN ANEL BANDA C

DESIGN DE UM ANEL DE RESSONÂNCIA

Especificações

Centrado na banda C

FSR = 0.8 nm

MWHW = 0.2 nm

SOI in SiO2

Guia: 0.45/0.22 um

gap = 150 nm

Valores Teóricos

Comprimento total = 650.82 um

Comprimento de acoplamento = 15.13 um

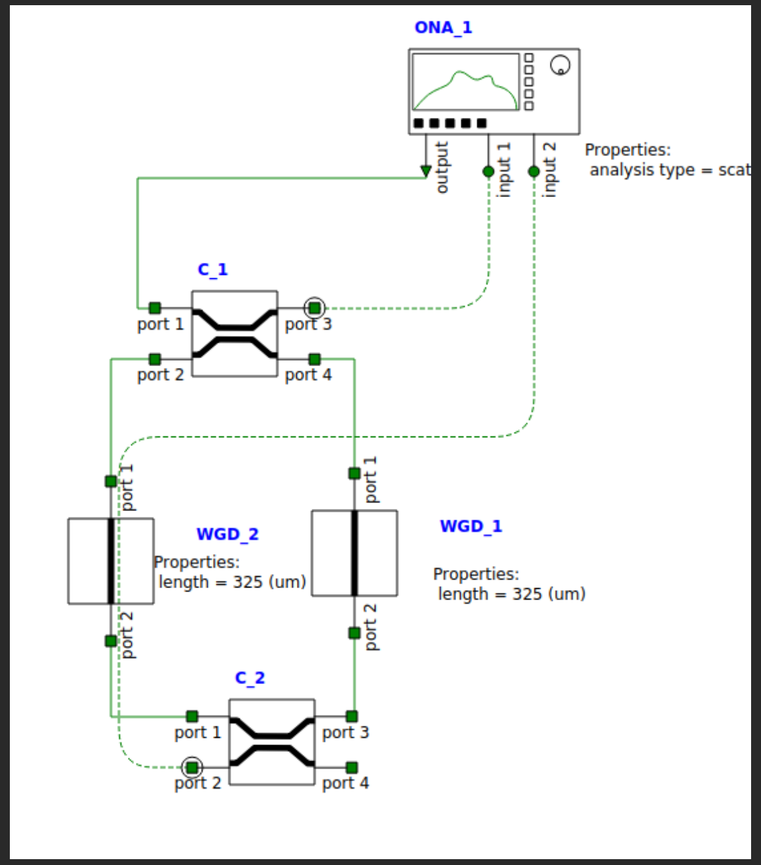
Raio = 98.76 um

Q factor = 7749

Finesse = 4

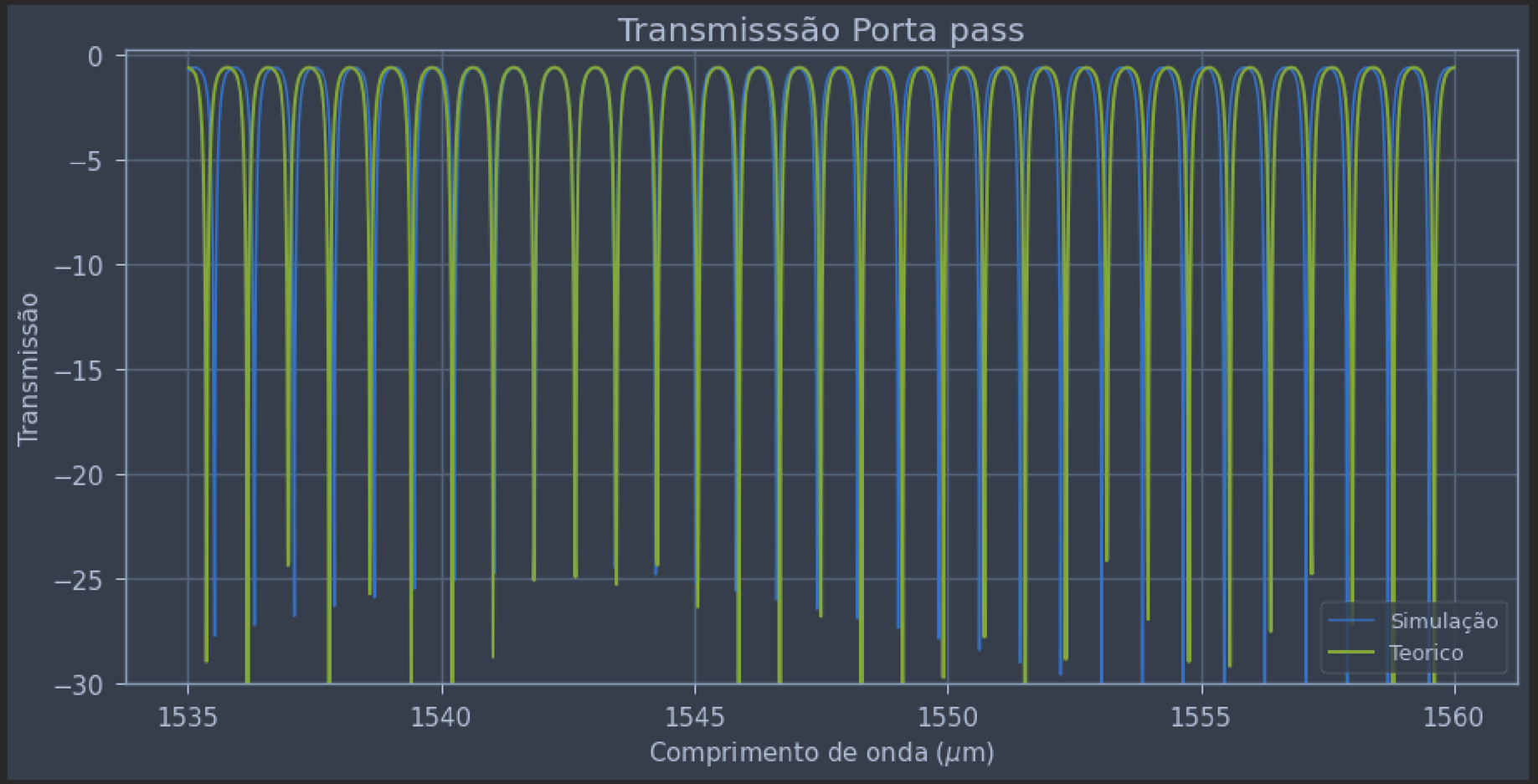
DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação no Interconect



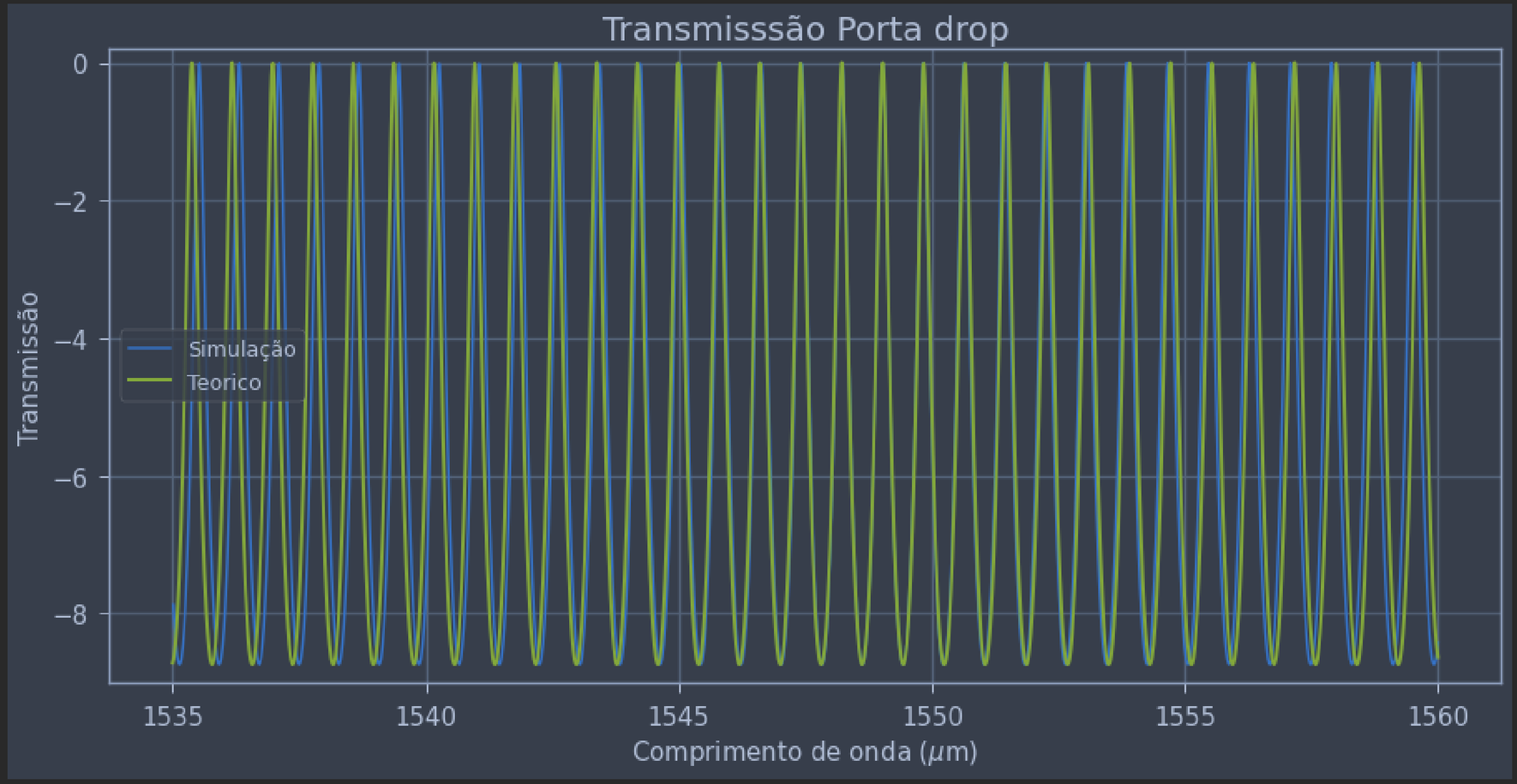
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



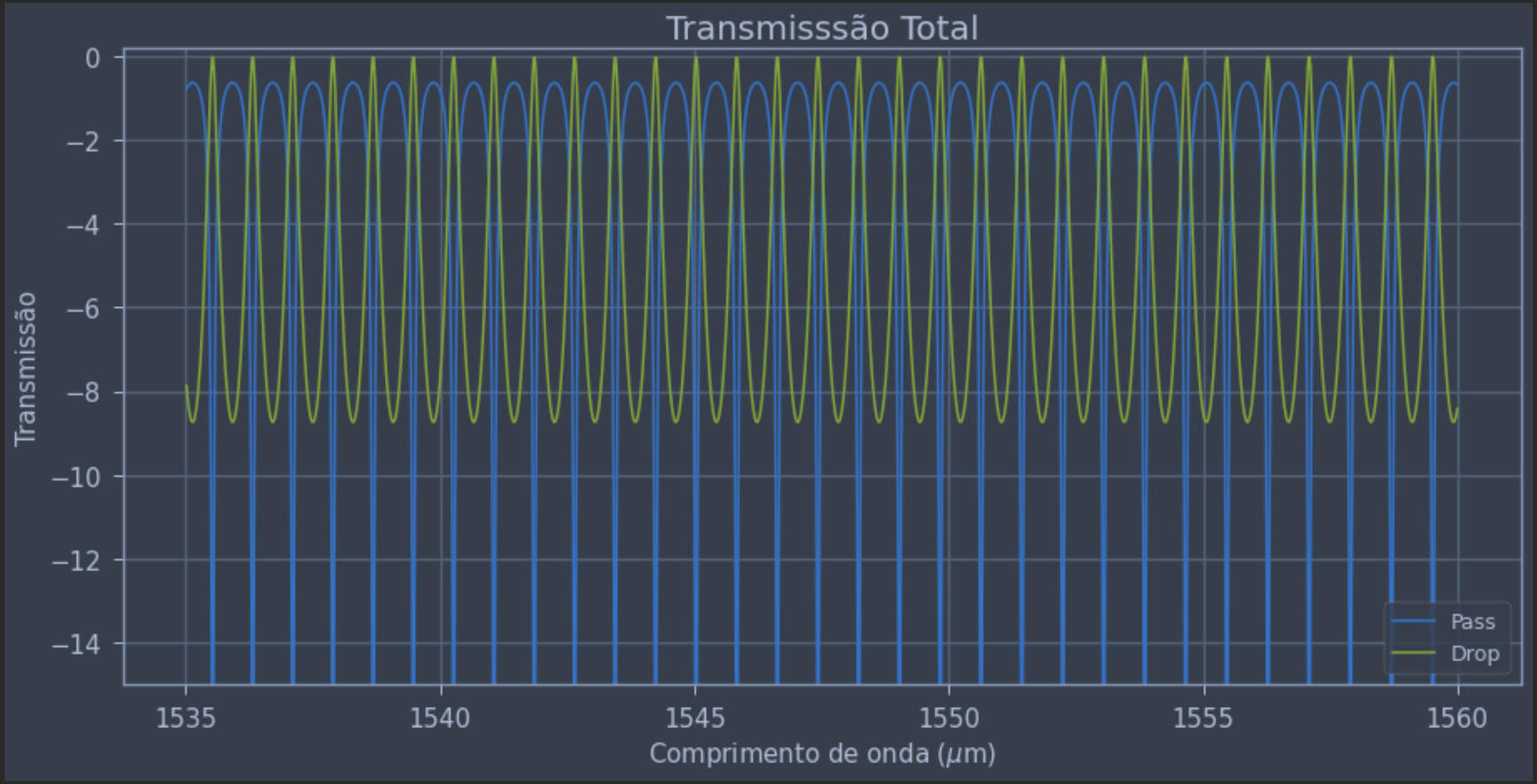
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



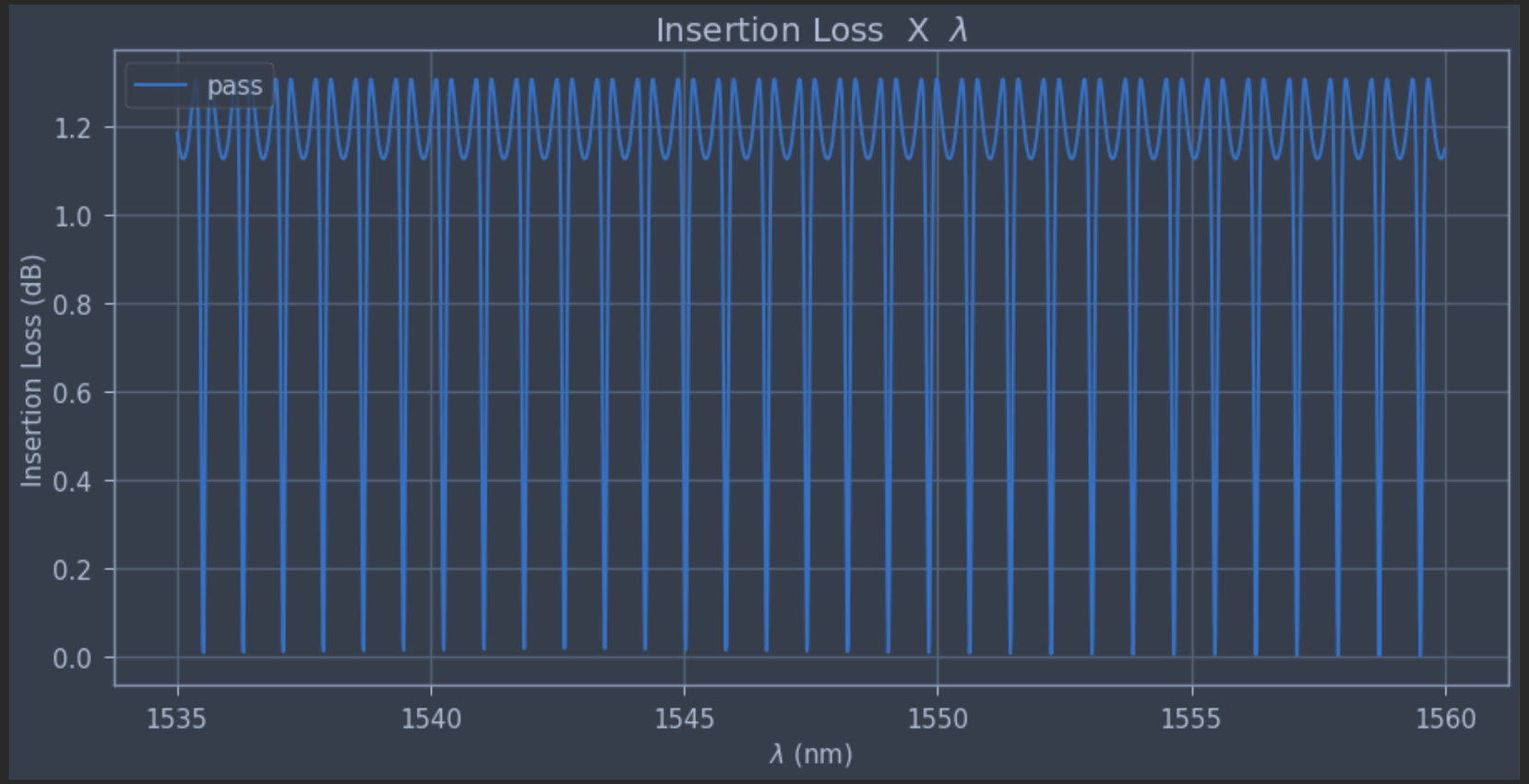
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



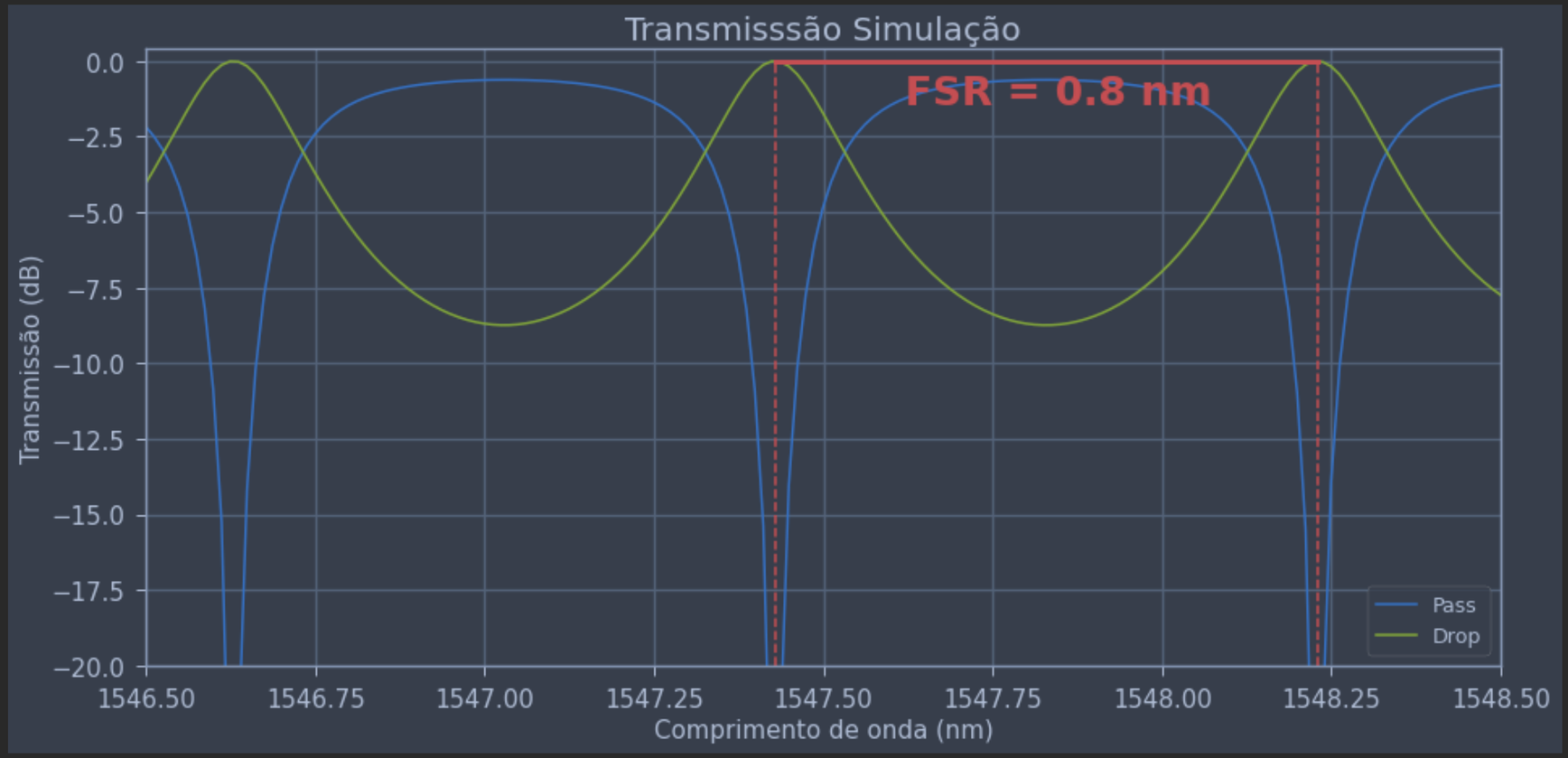
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



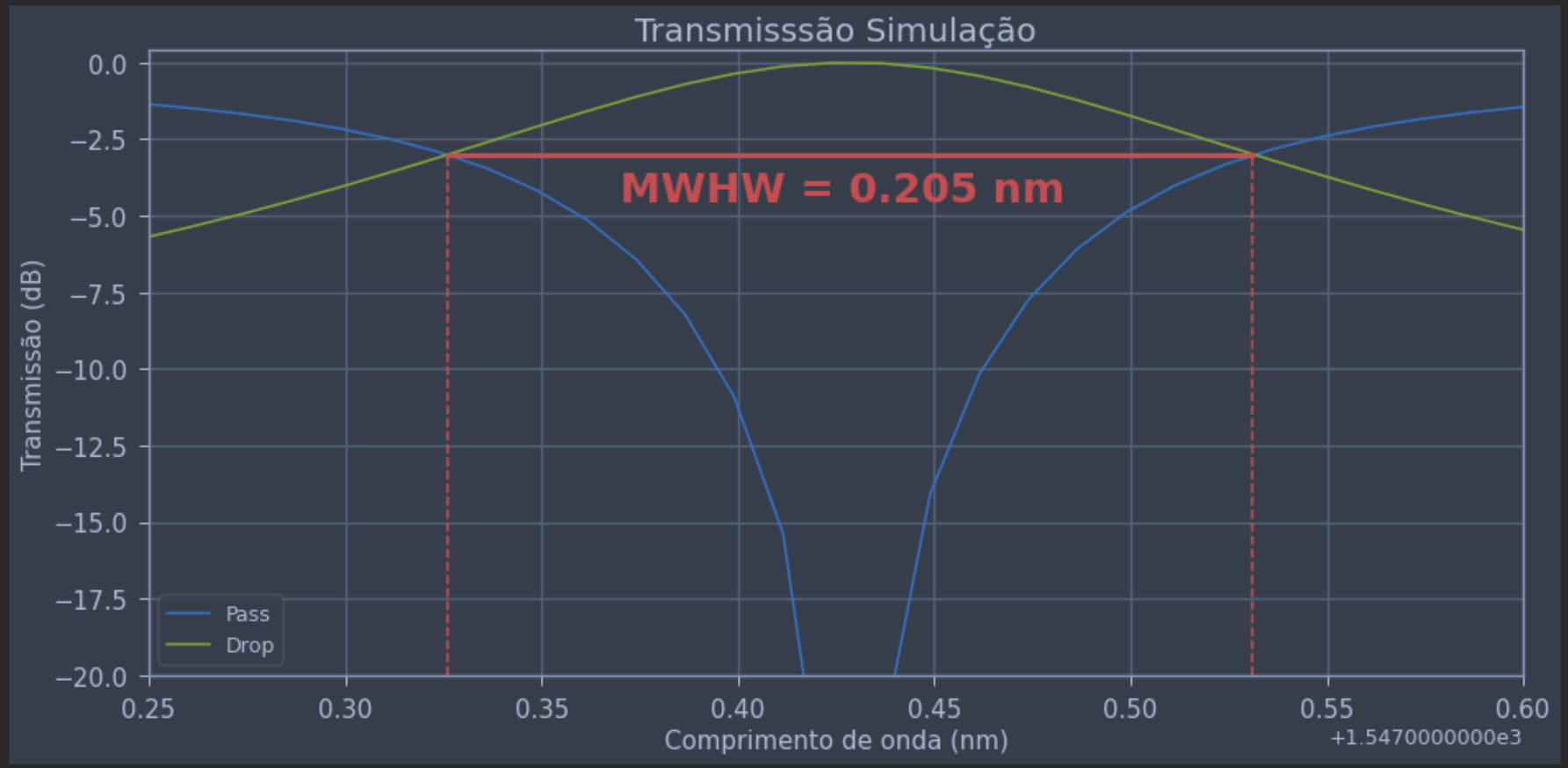
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



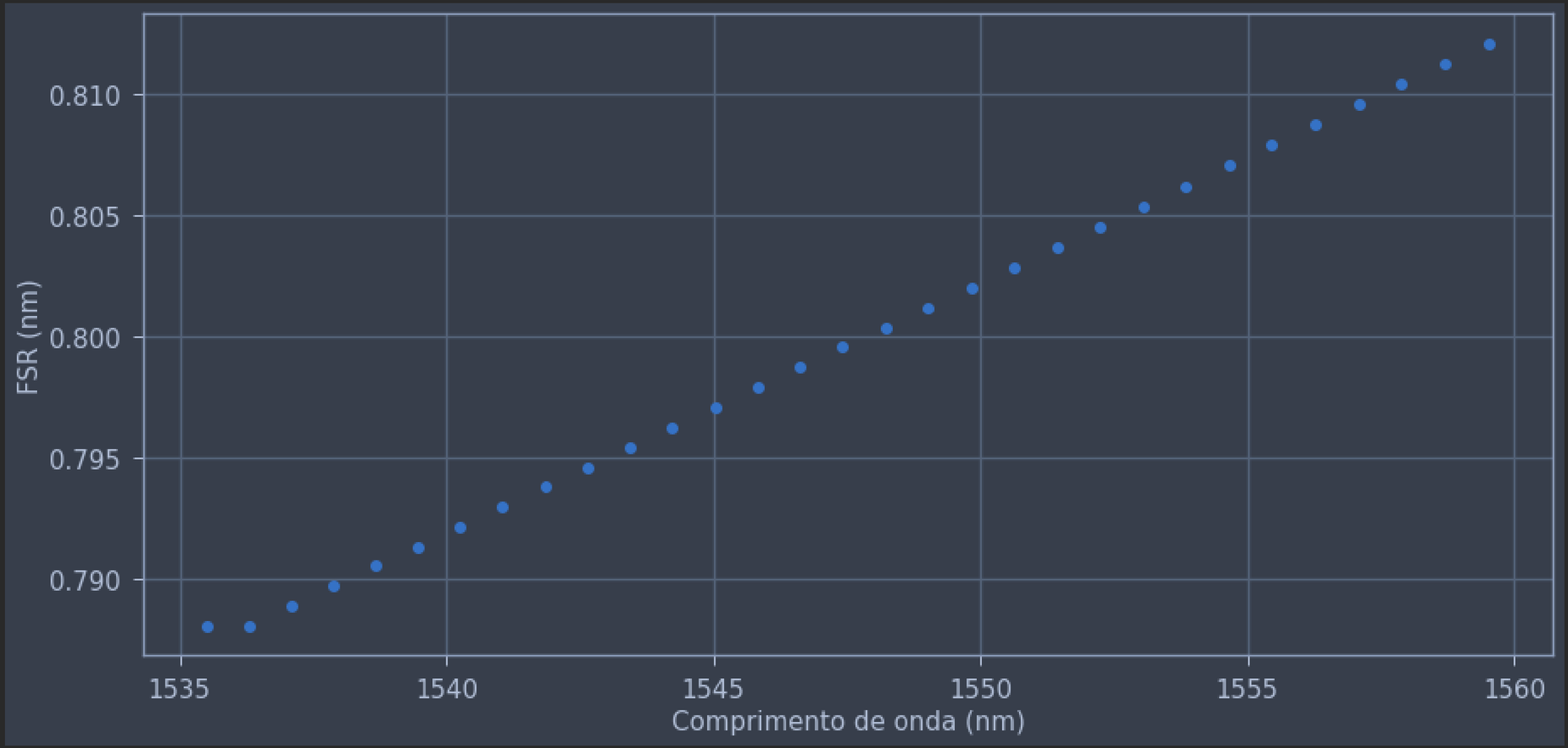
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



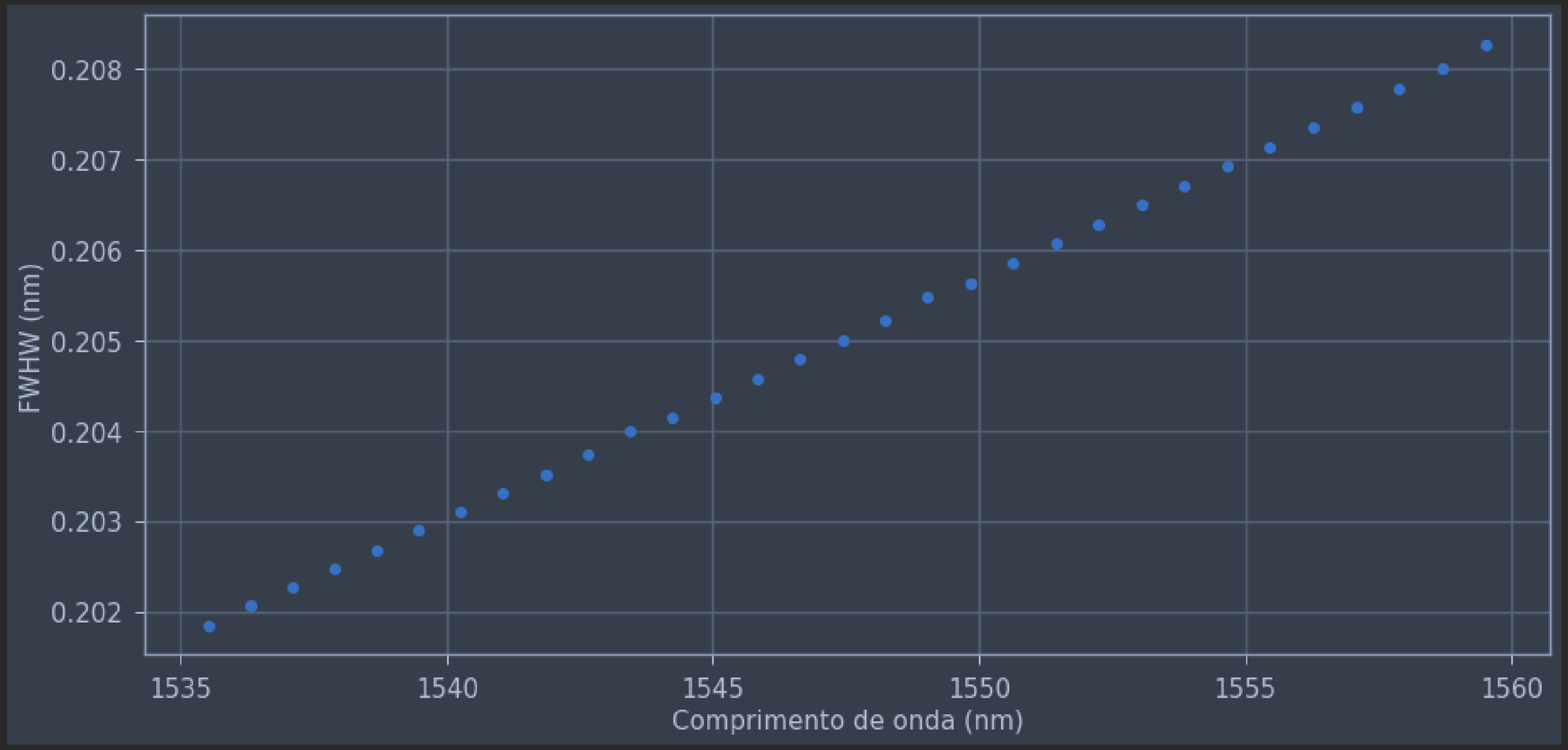
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



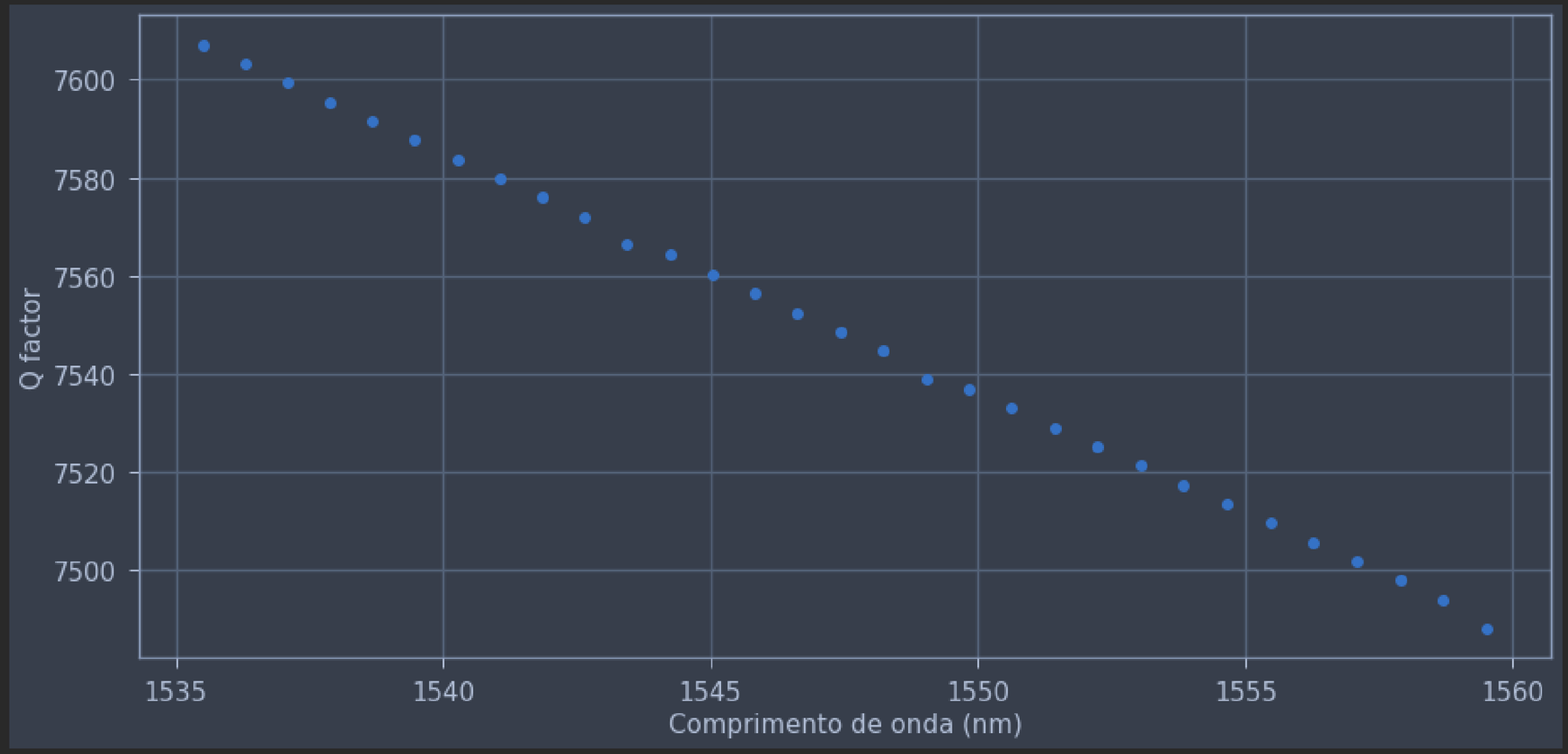
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



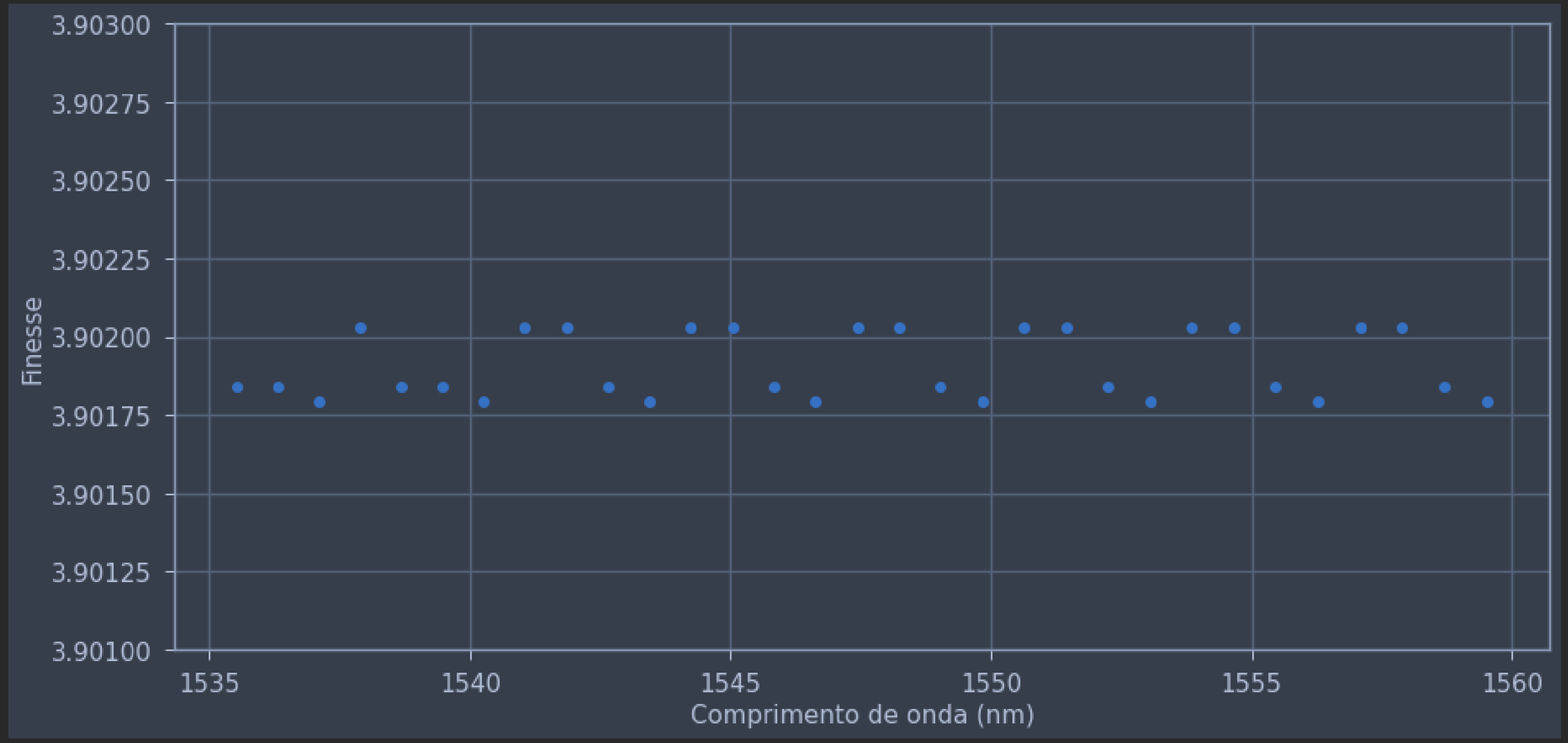
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



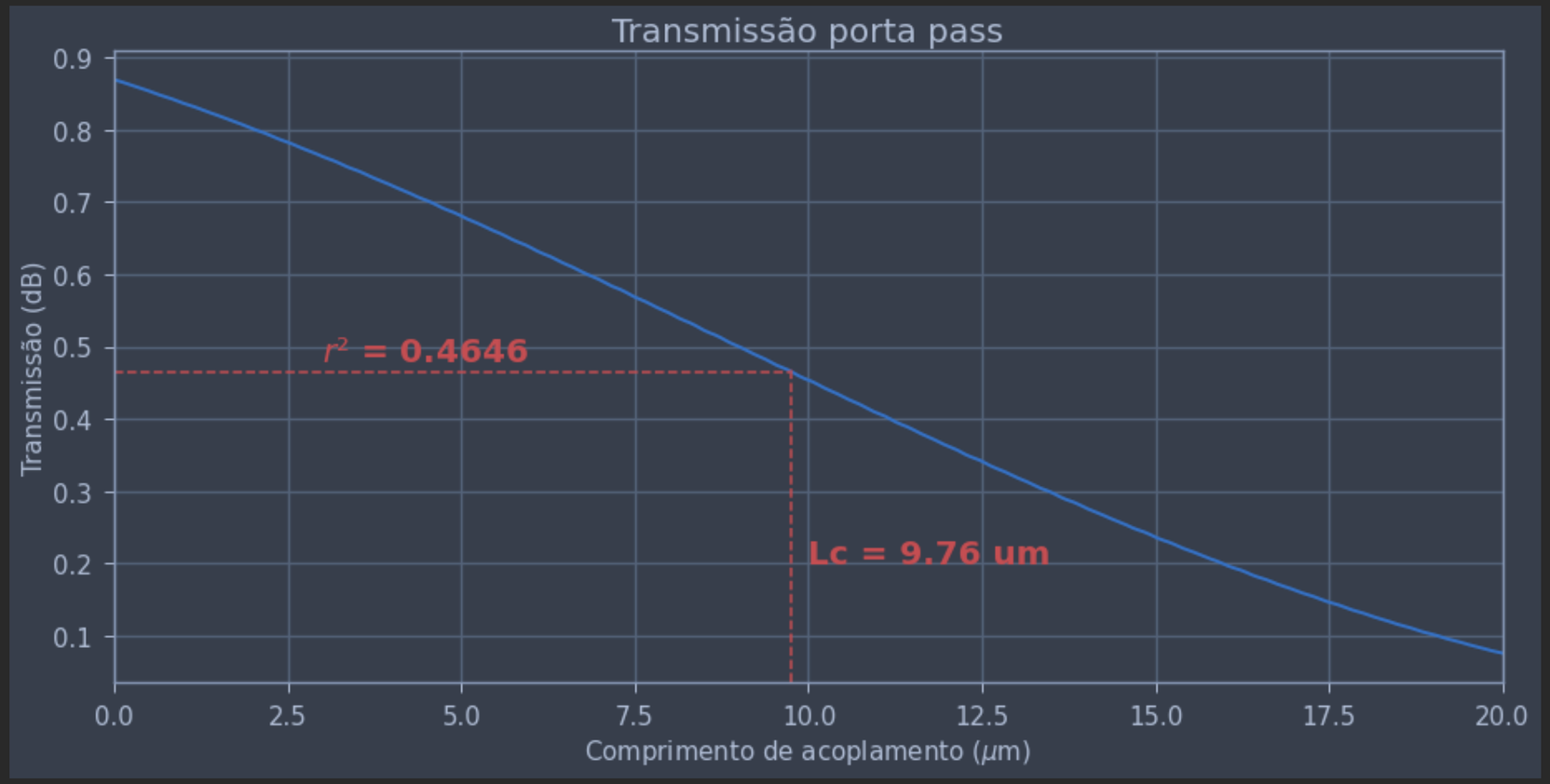
DESIGN DE UM ANEL DE RESSONÂNCIA

Analise do acoplamento

Solver usado: EME

DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



SEMANA 4

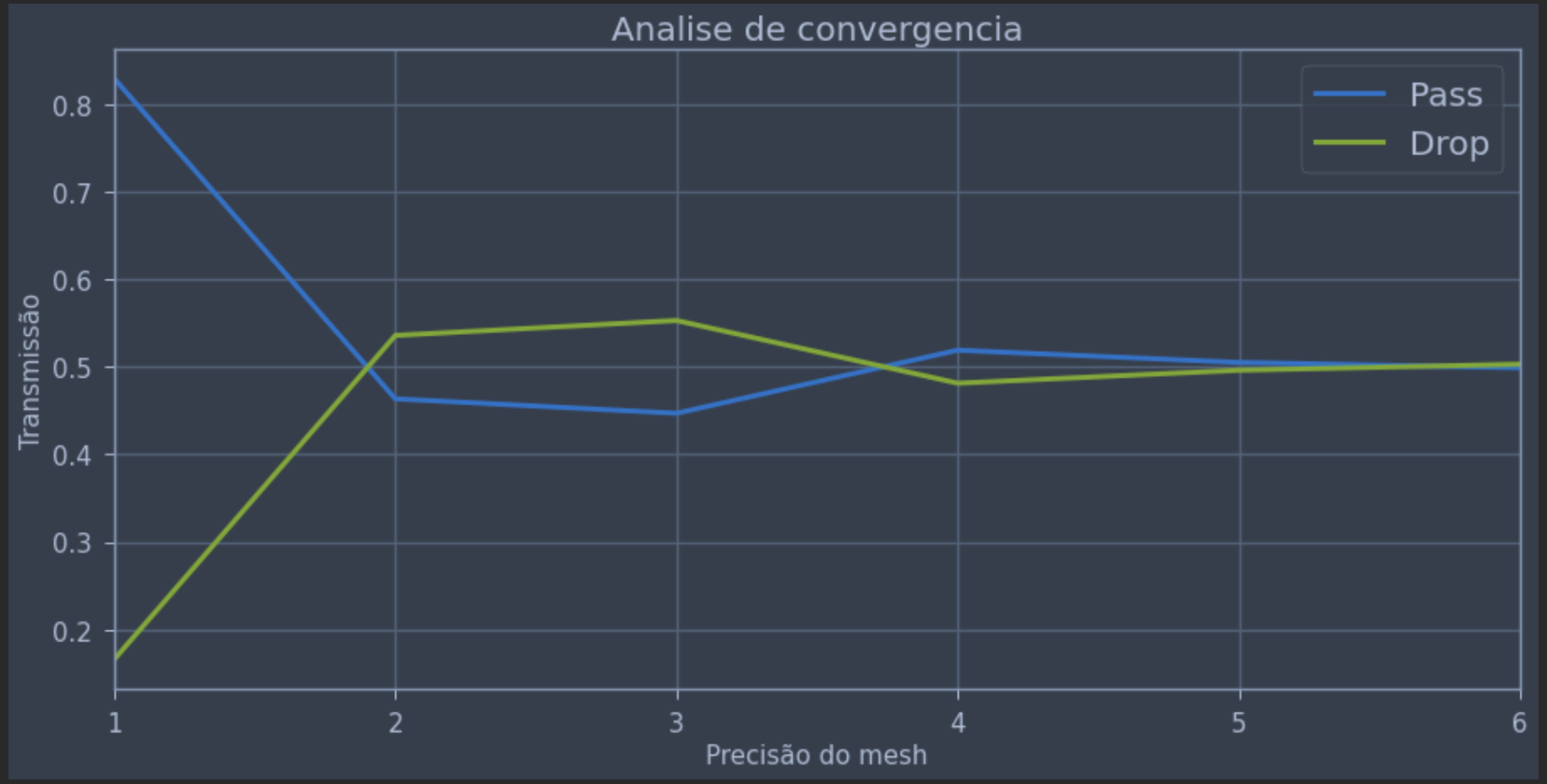
Simulações no FDTD

DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação dos componentes

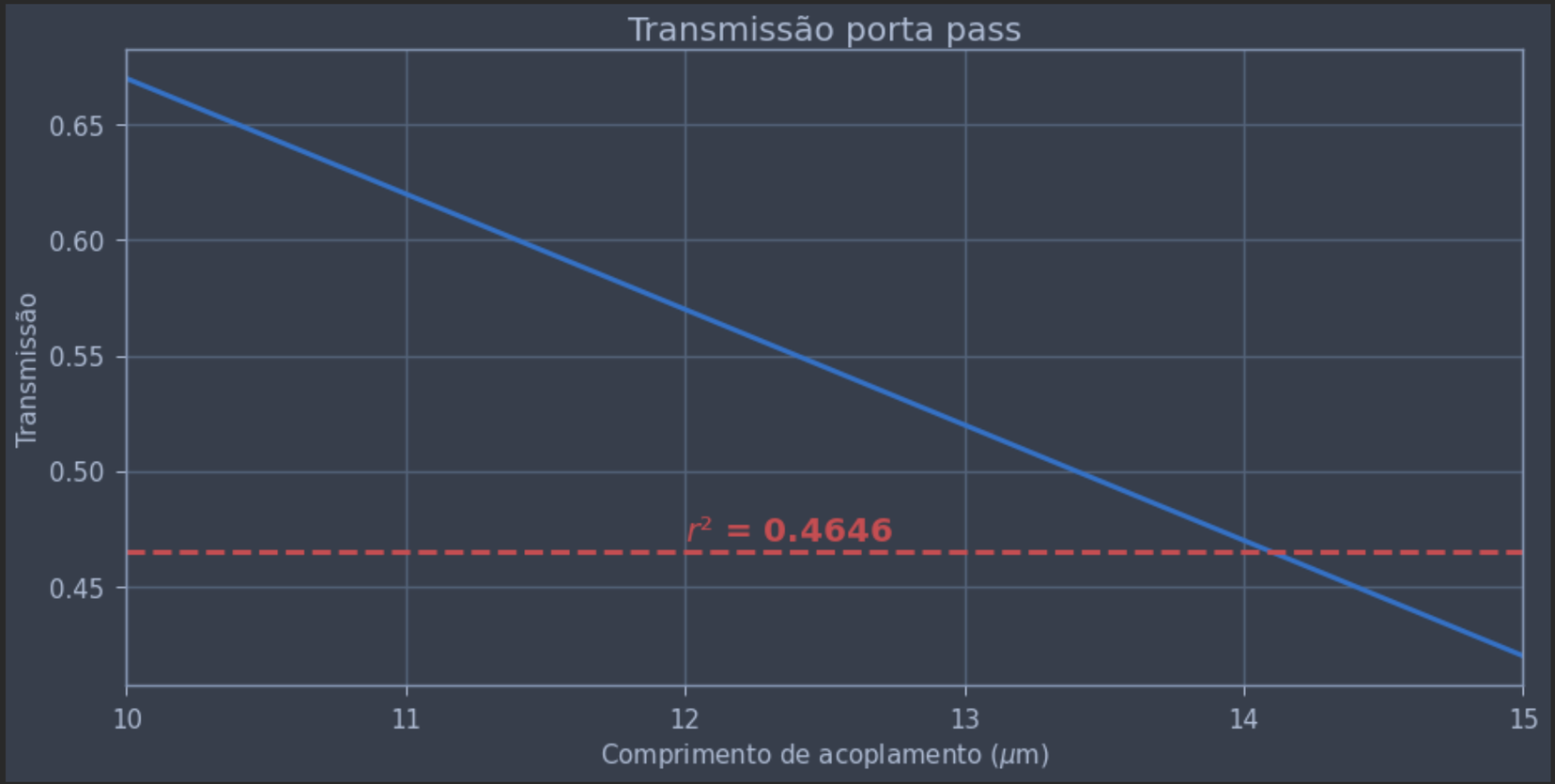
DESIGN DE UM ANEL DE RESSONÂNCIA

Analise de convergência



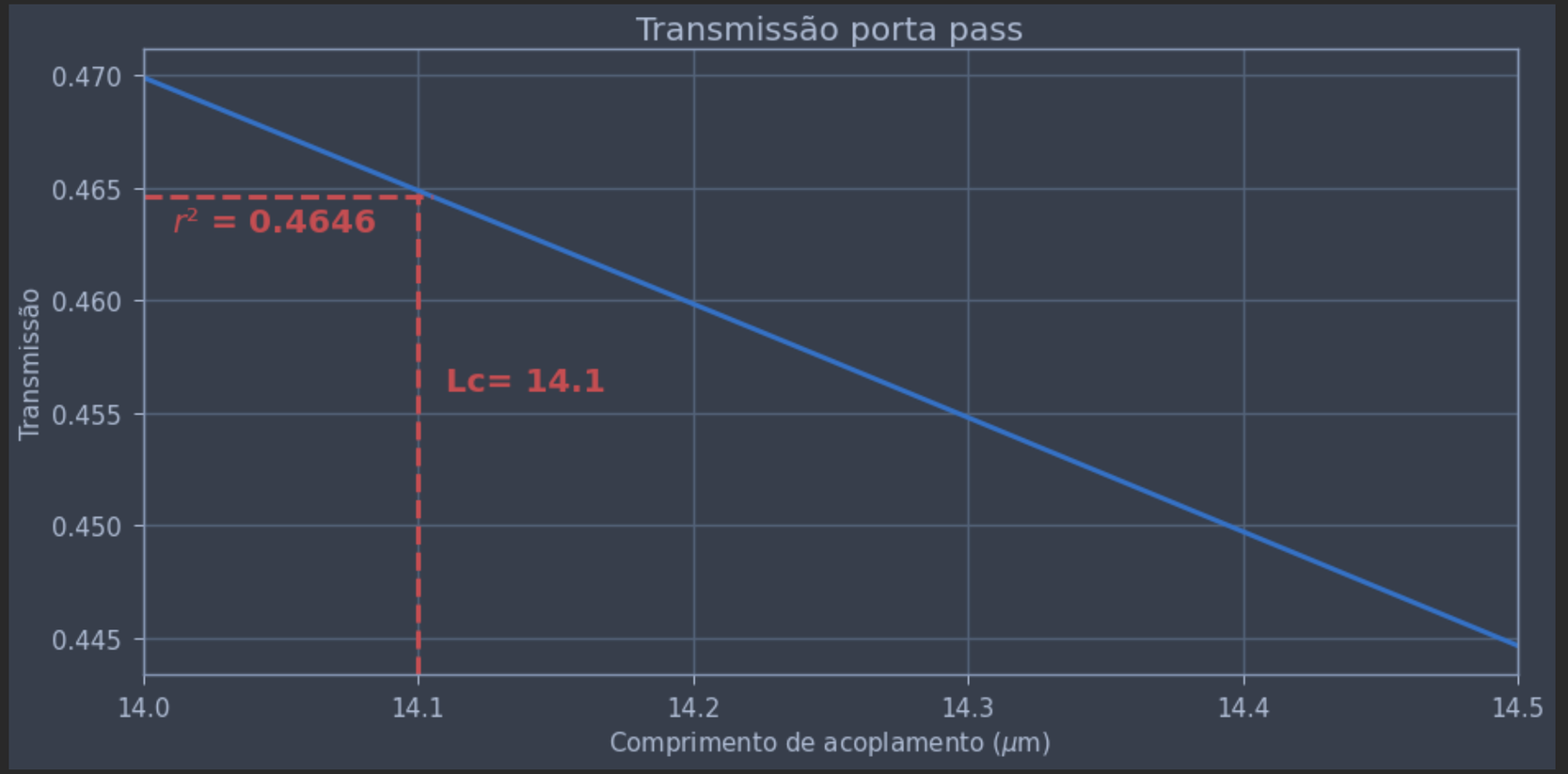
DESIGN DE UM ANEL DE RESSONÂNCIA

Analise do acoplamento



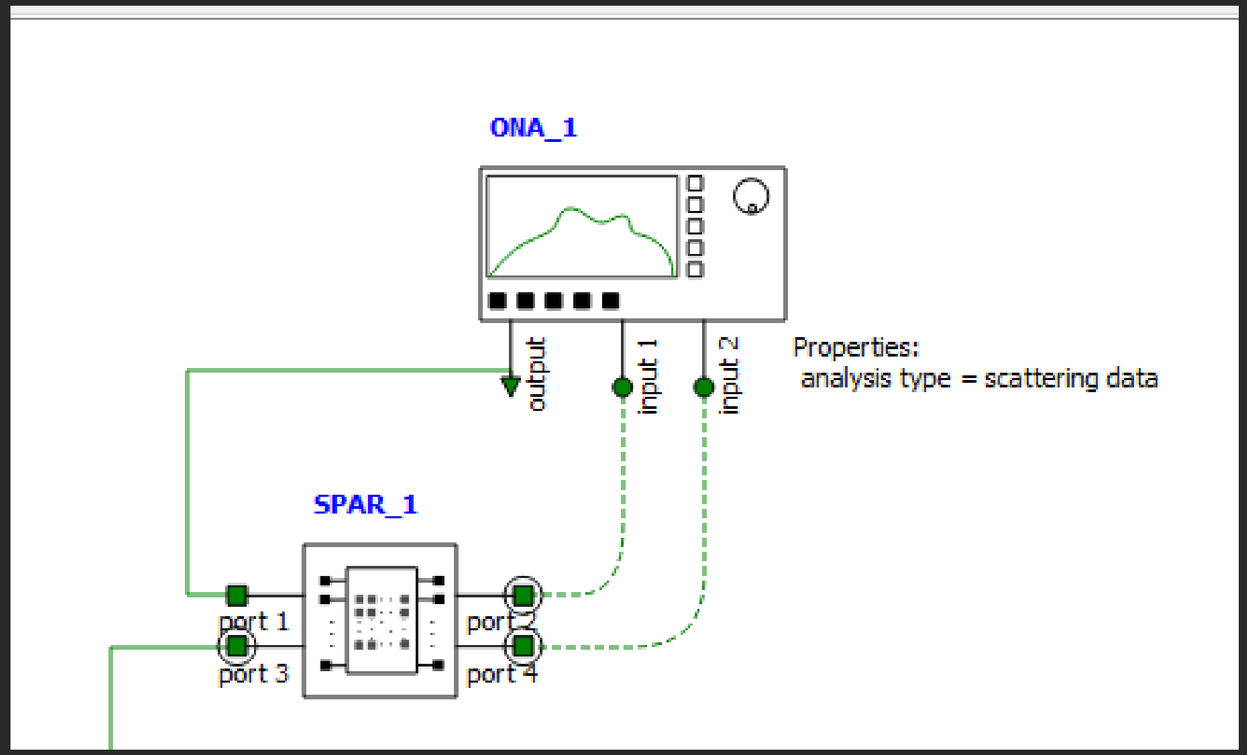
DESIGN DE UM ANEL DE RESSONÂNCIA

Analise do acoplamento



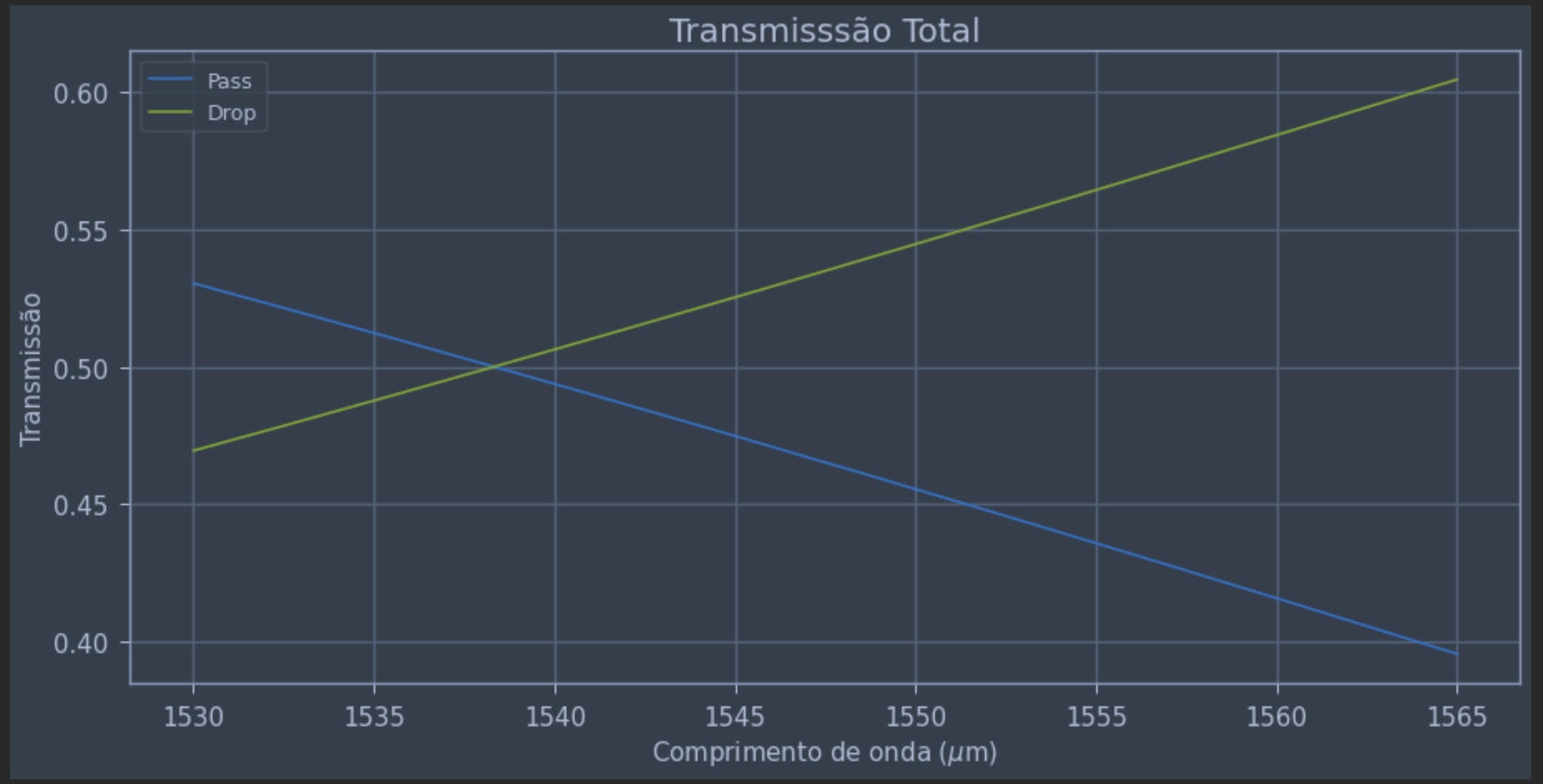
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



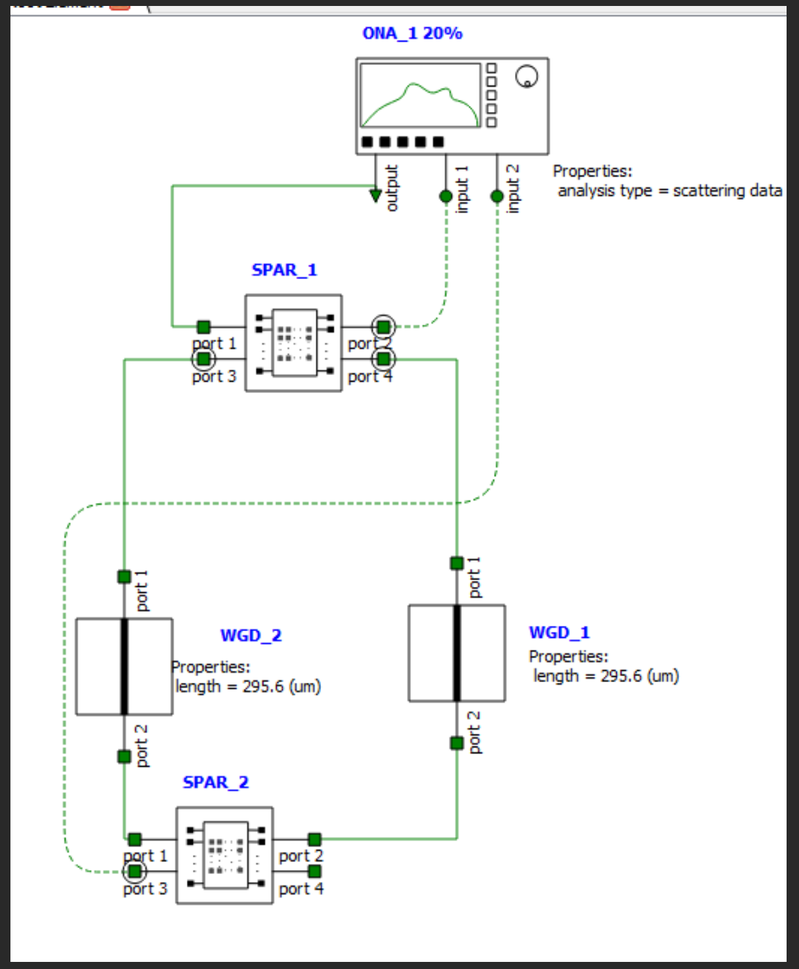
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



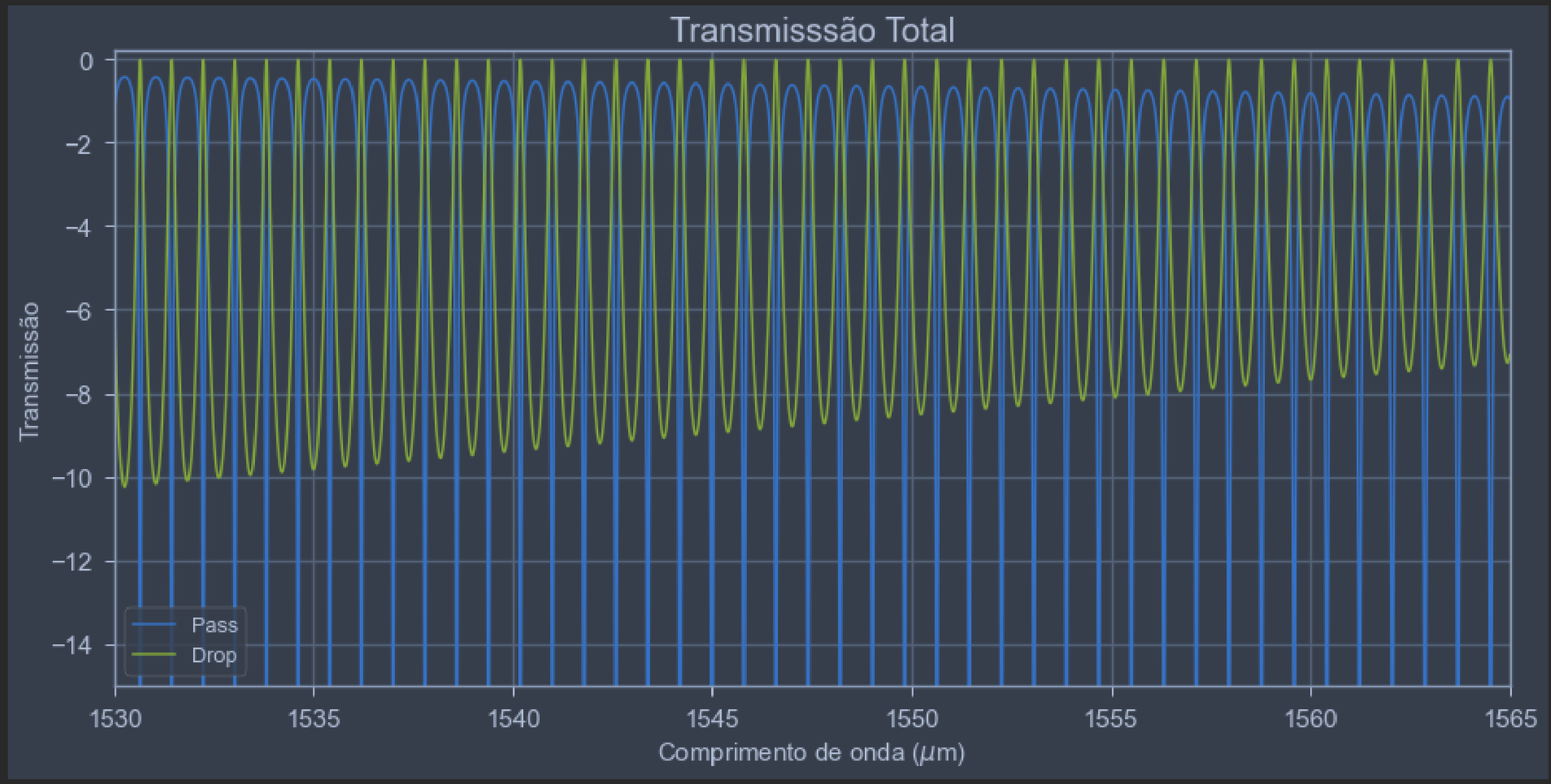
DESIGN DE UM ANEL DE RESSONÂNCIA

Circuito final



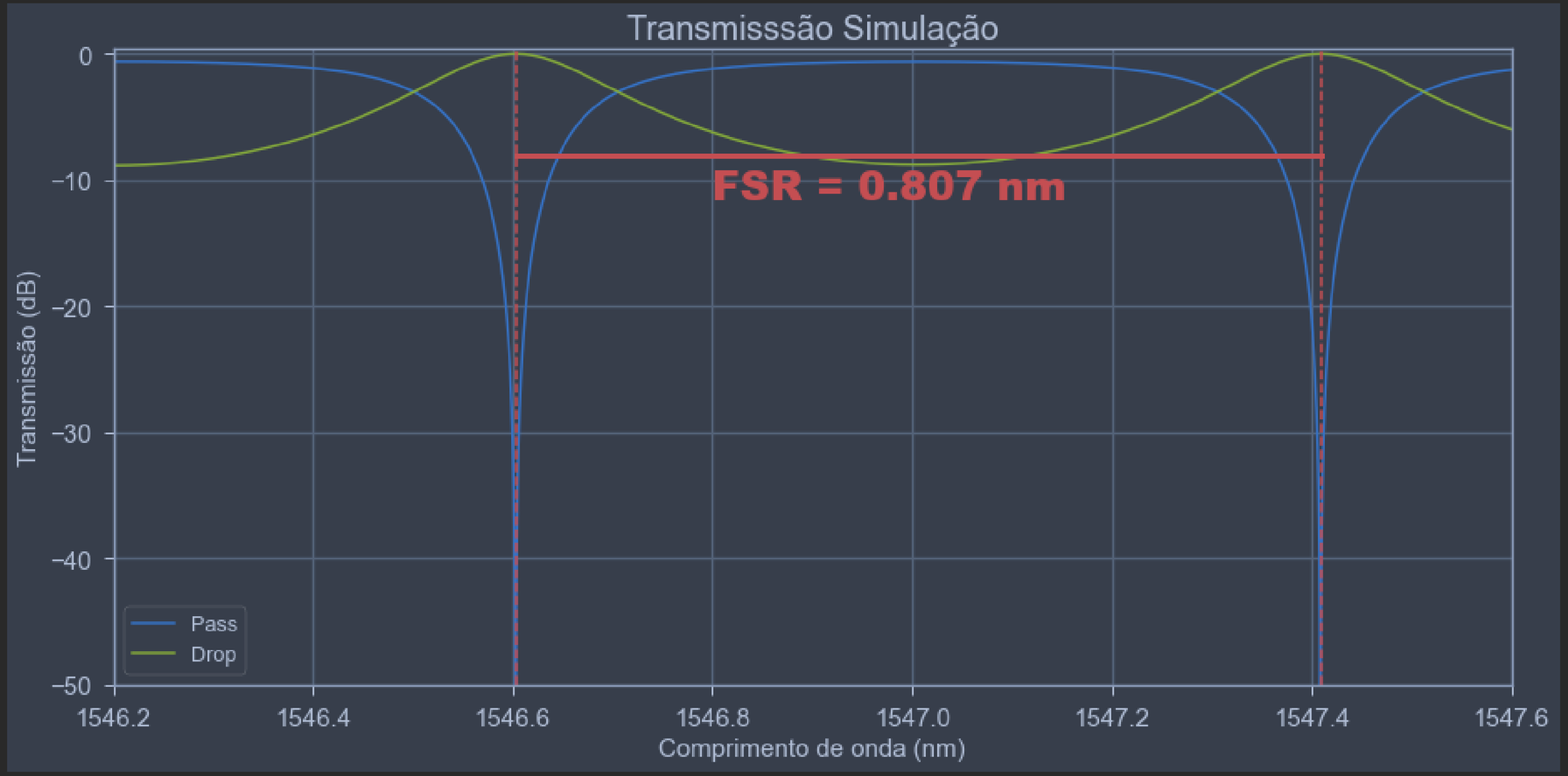
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



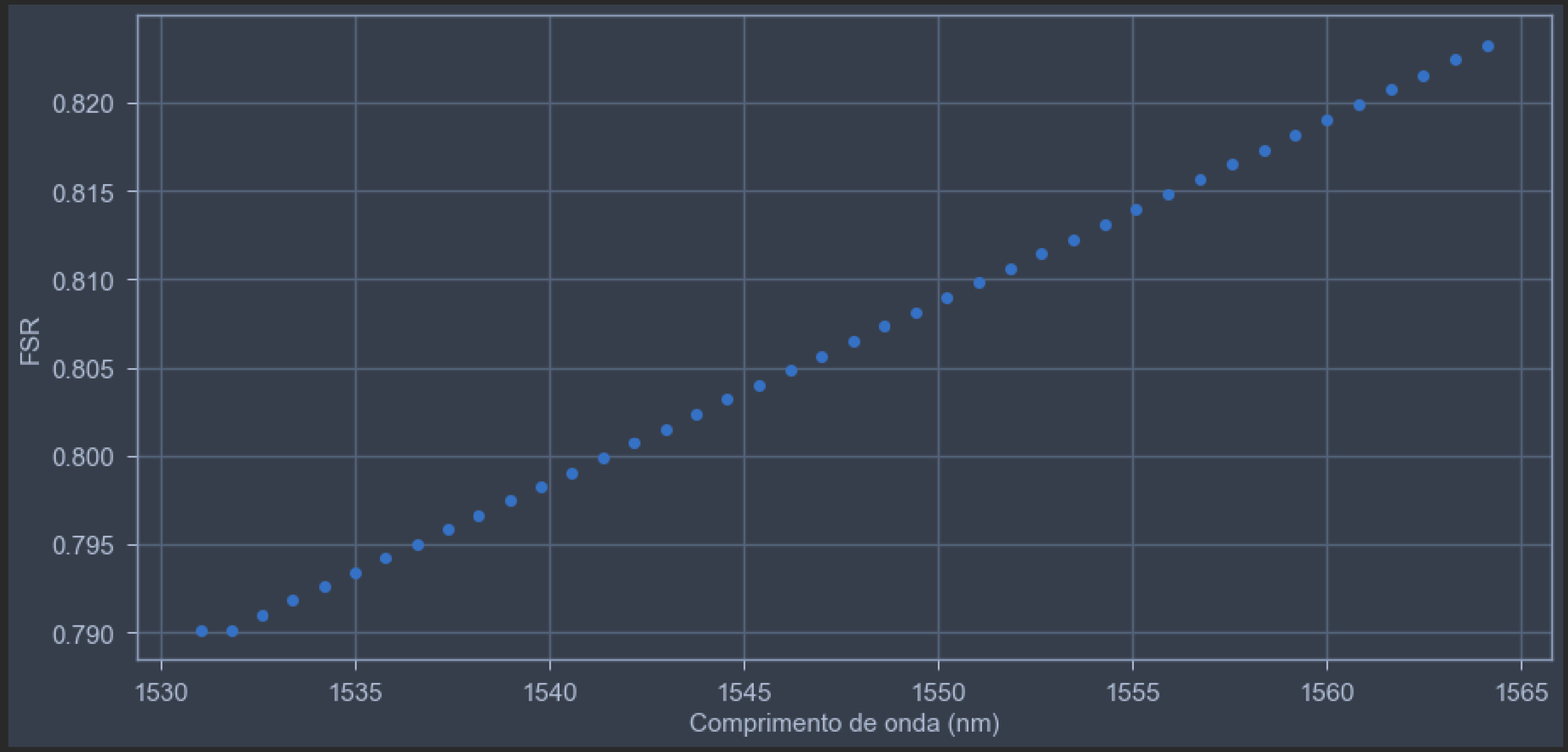
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



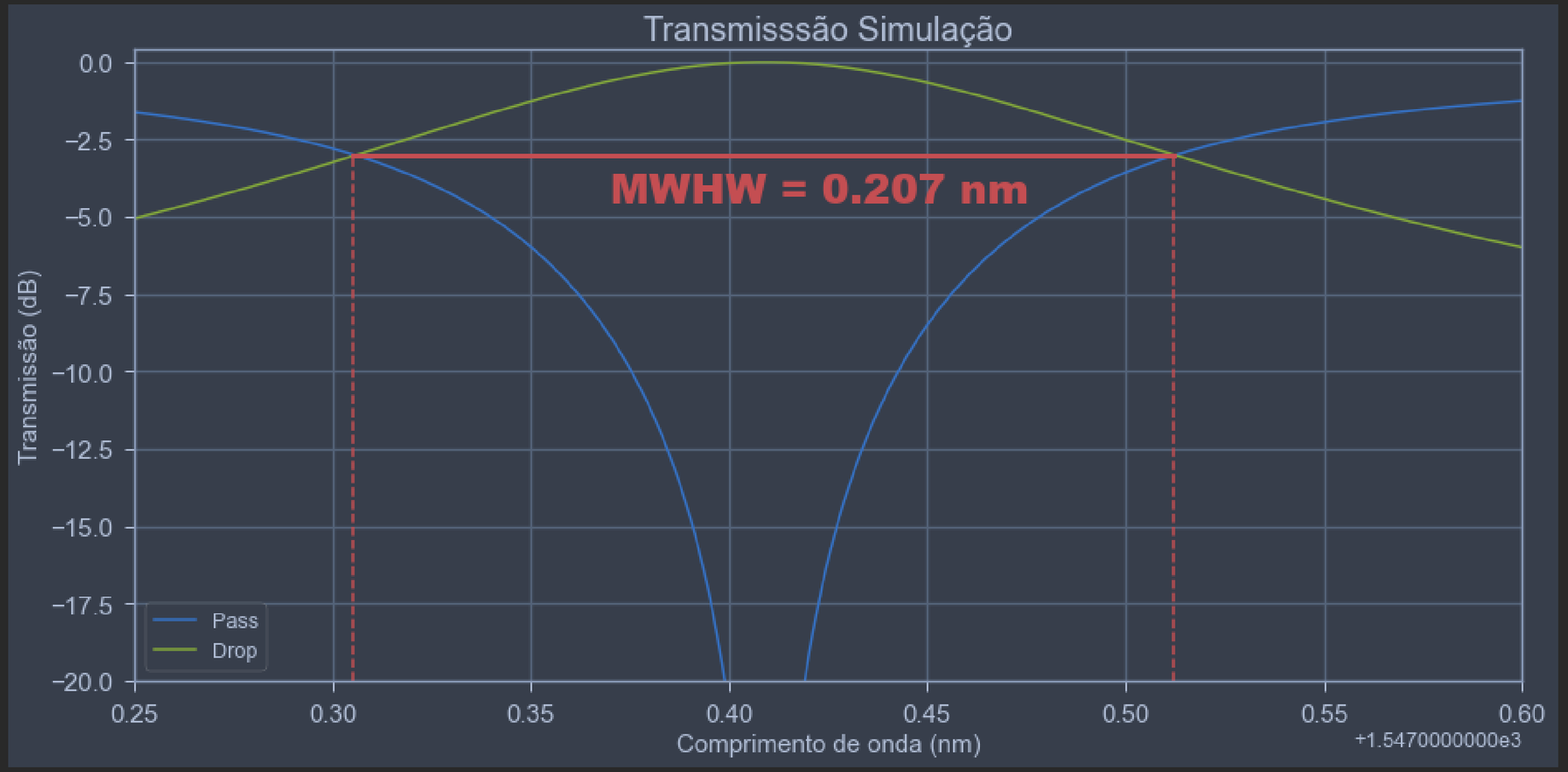
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



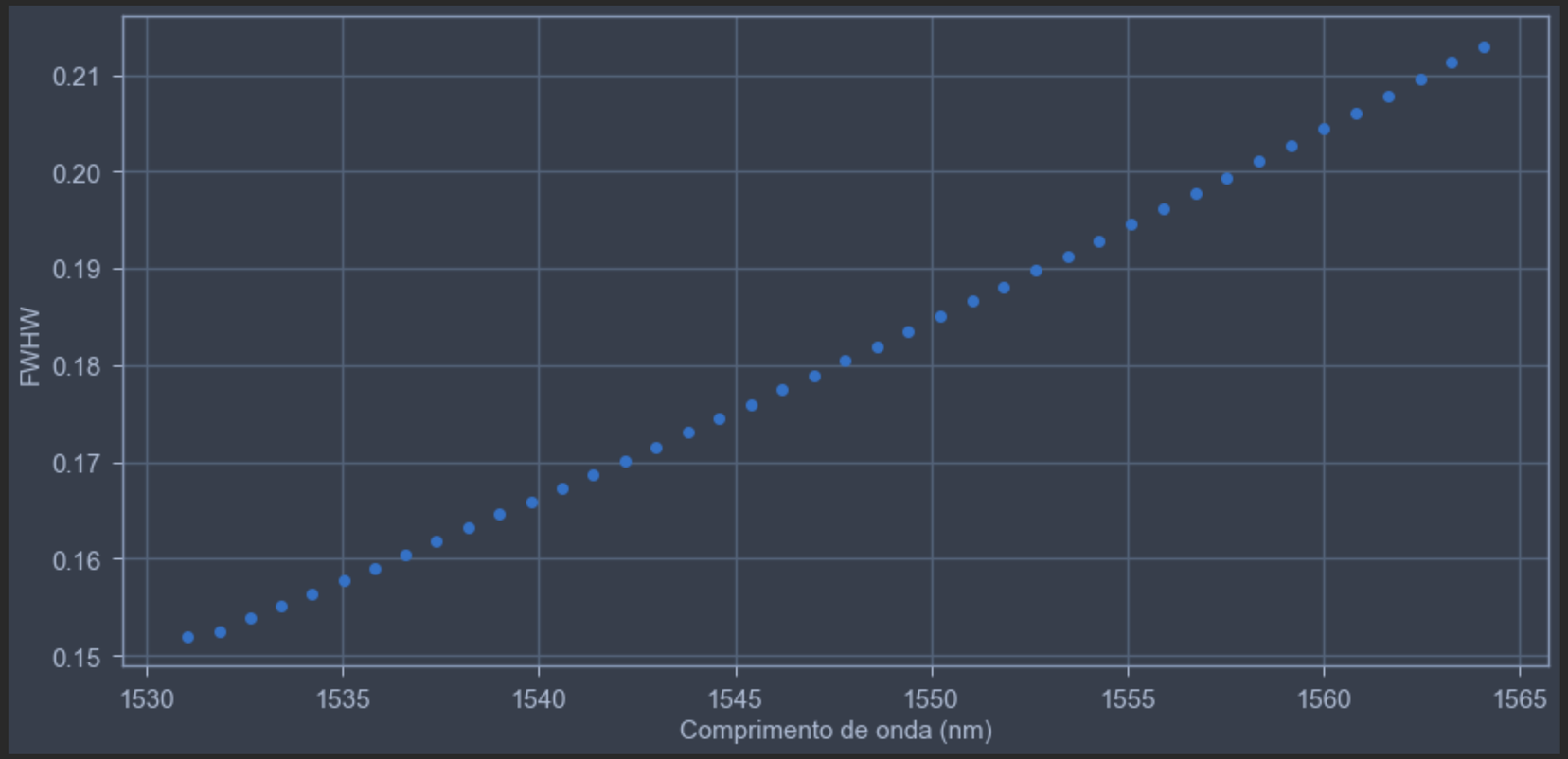
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



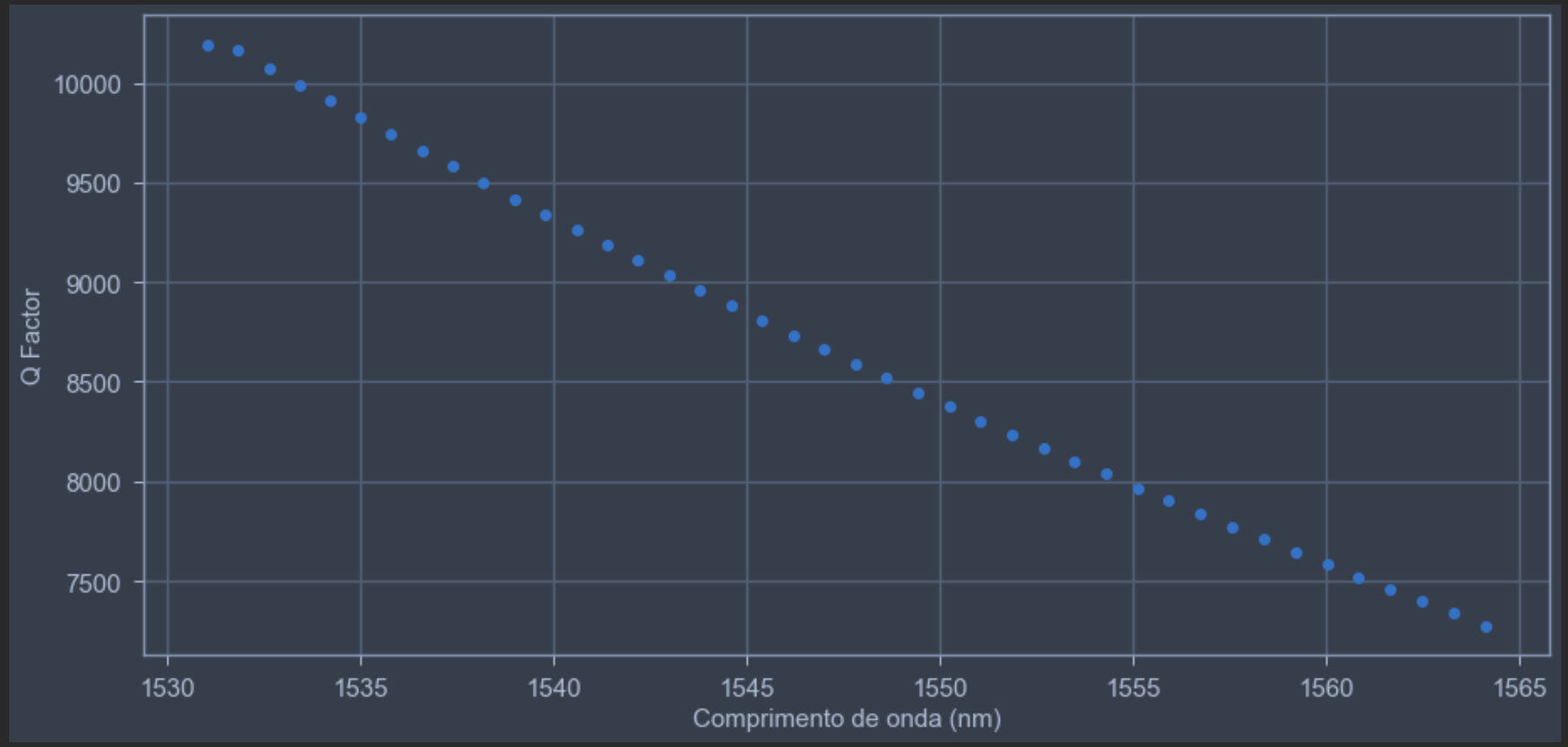
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



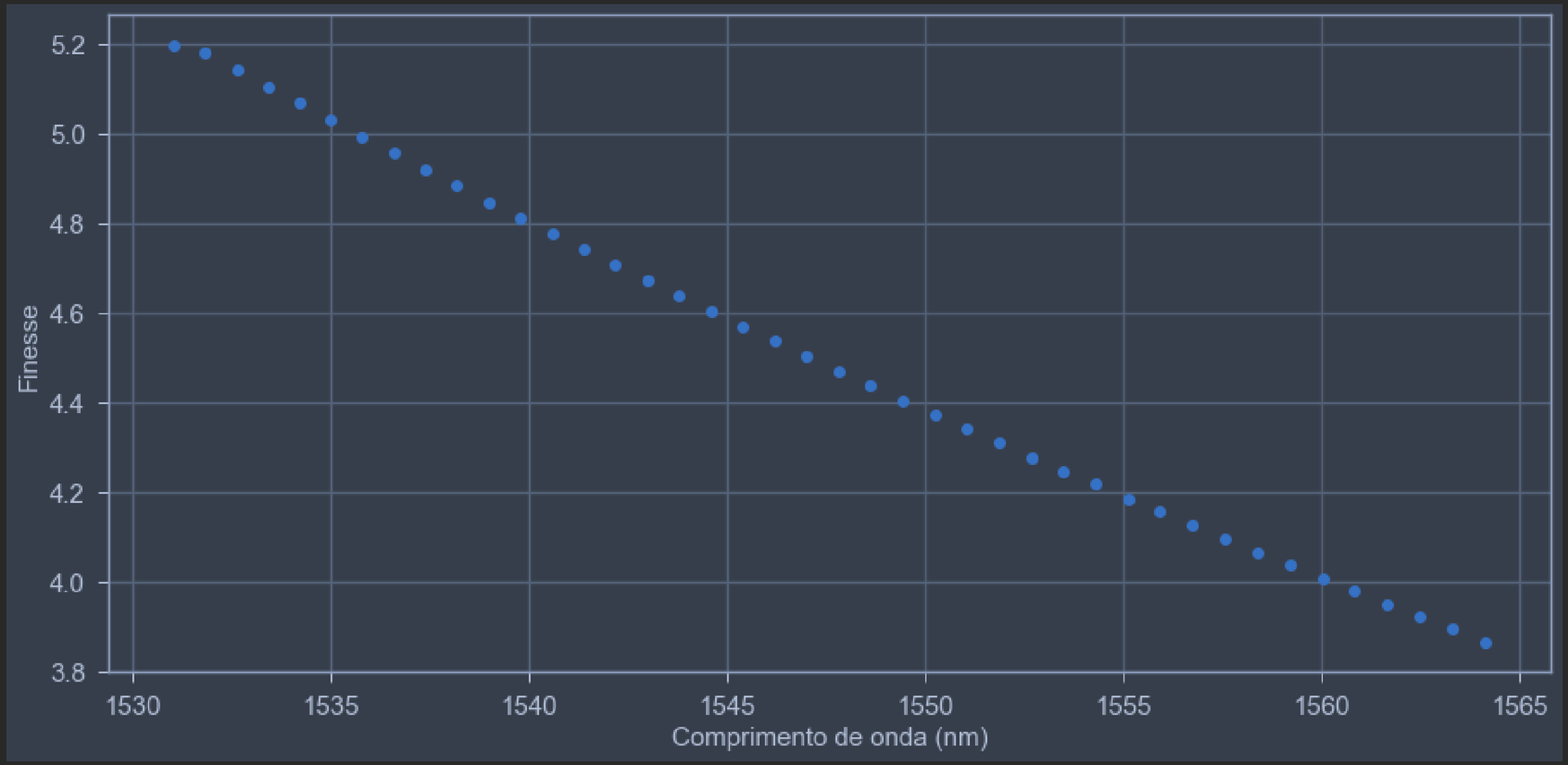
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultado Interconnect



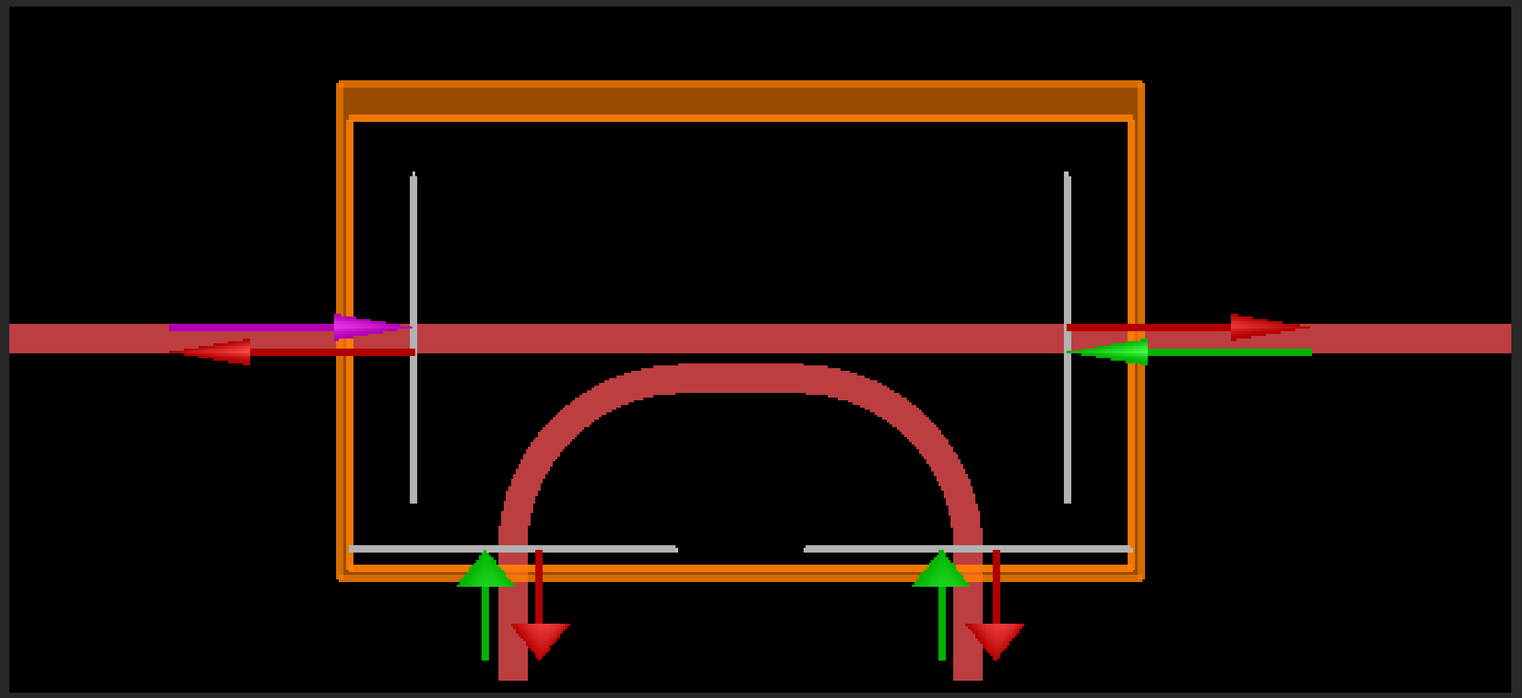
SEMANA 5

Otimização do 1º modelo

DESIGN DE UM ANEL DE RESSONÂNCIA

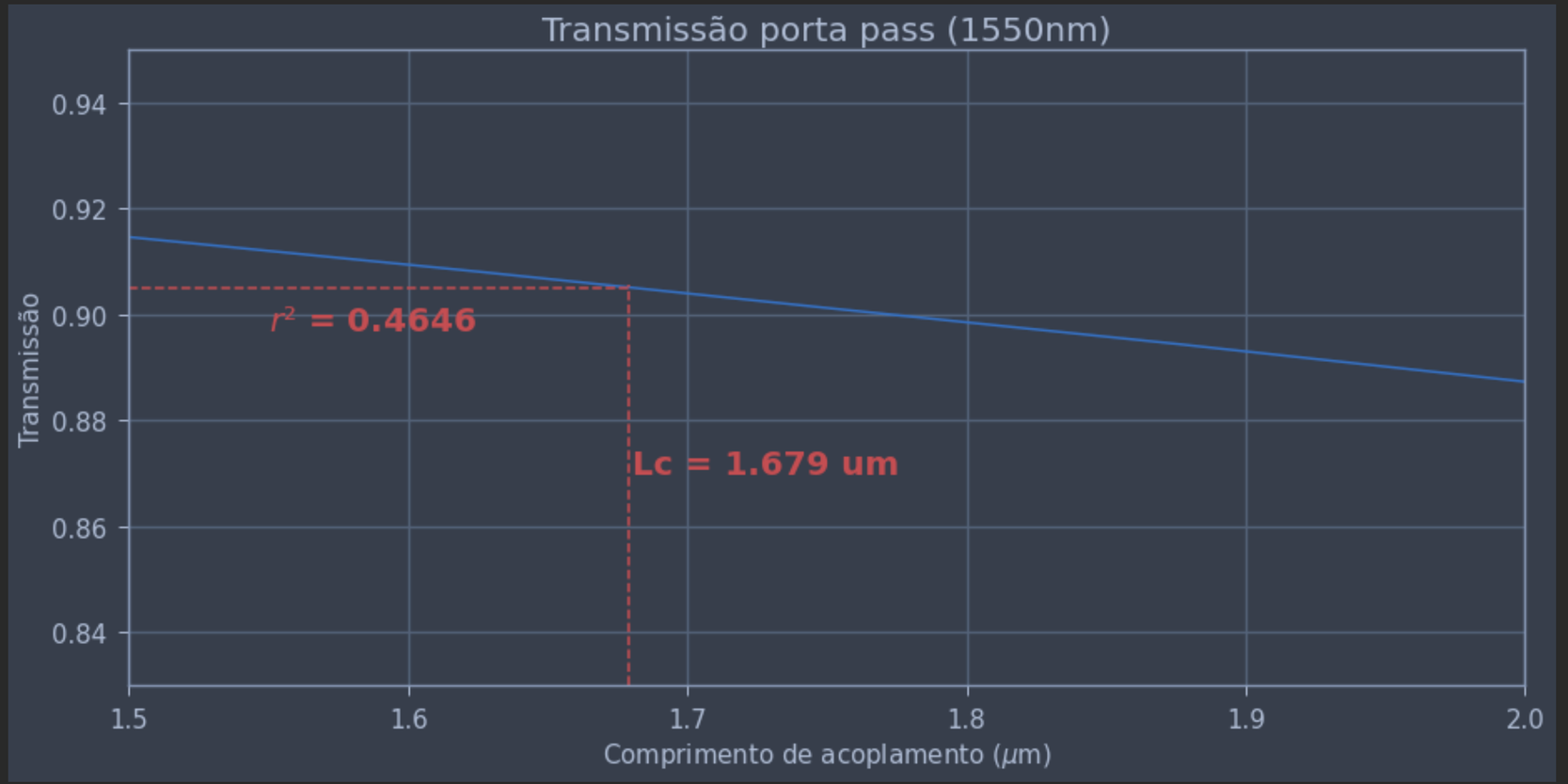
Segunda otimização

Chip buried



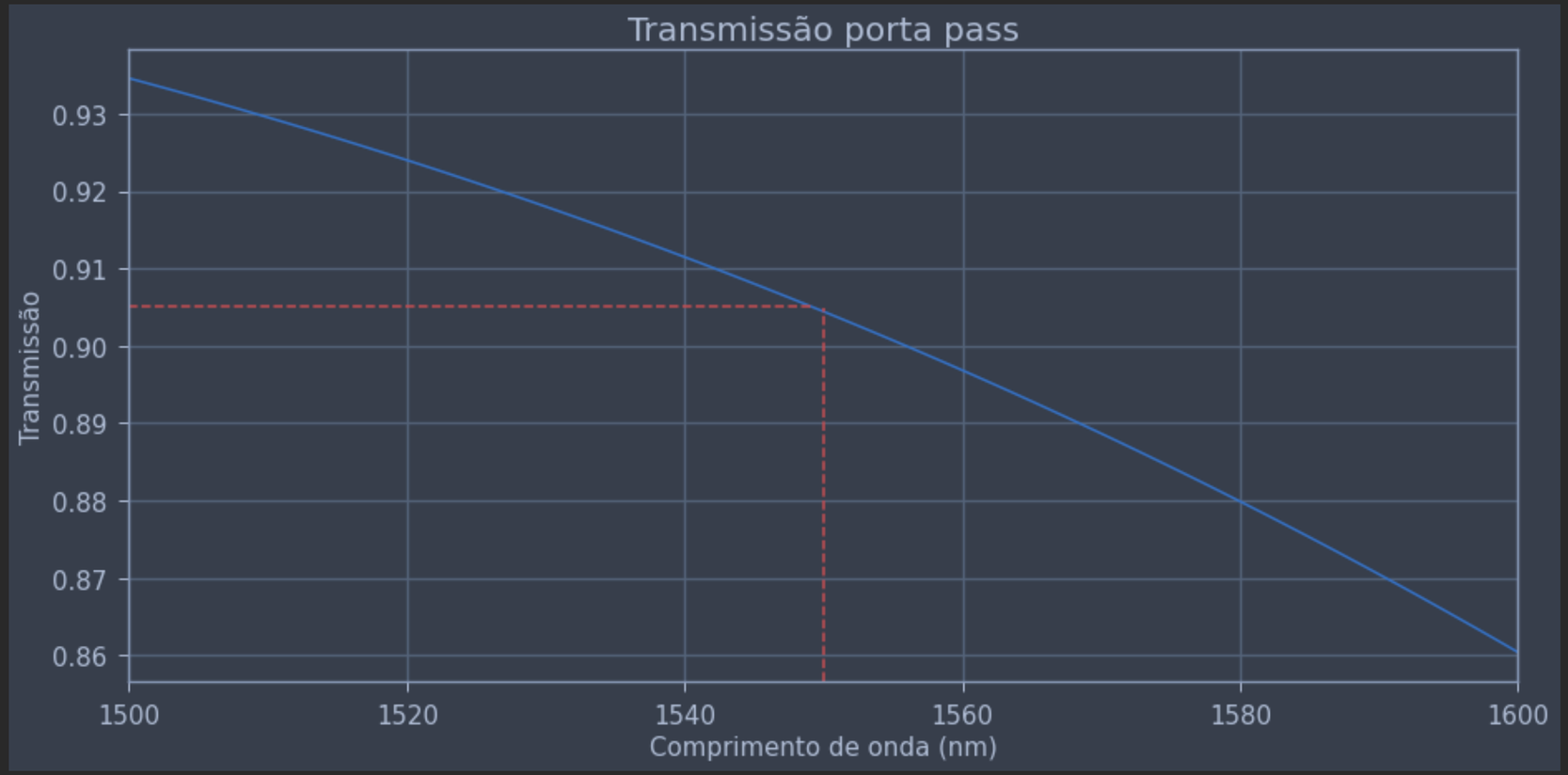
DESIGN DE UM ANEL DE RESSONÂNCIA

resultados sweep



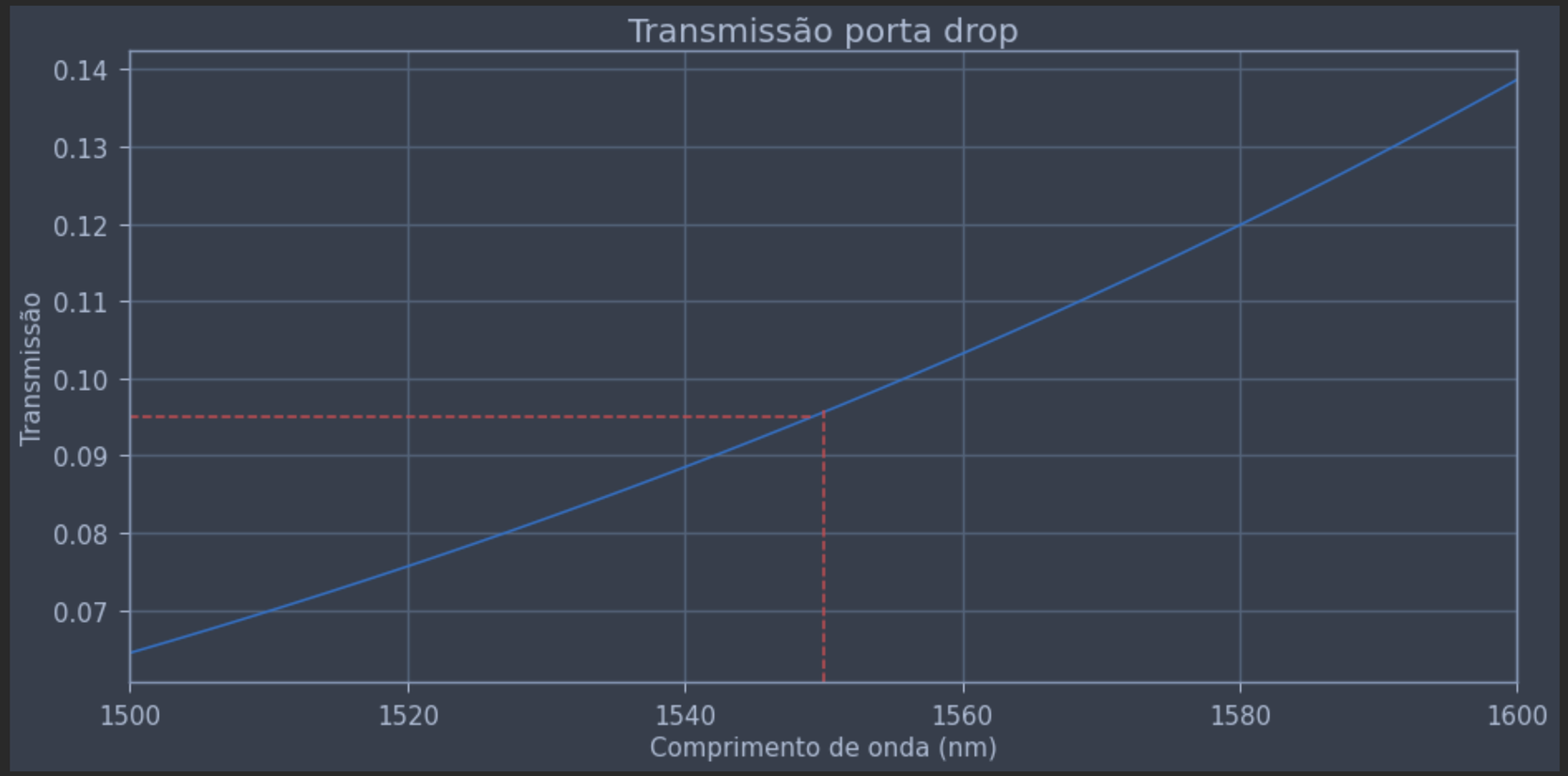
DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação FDTD otimizada



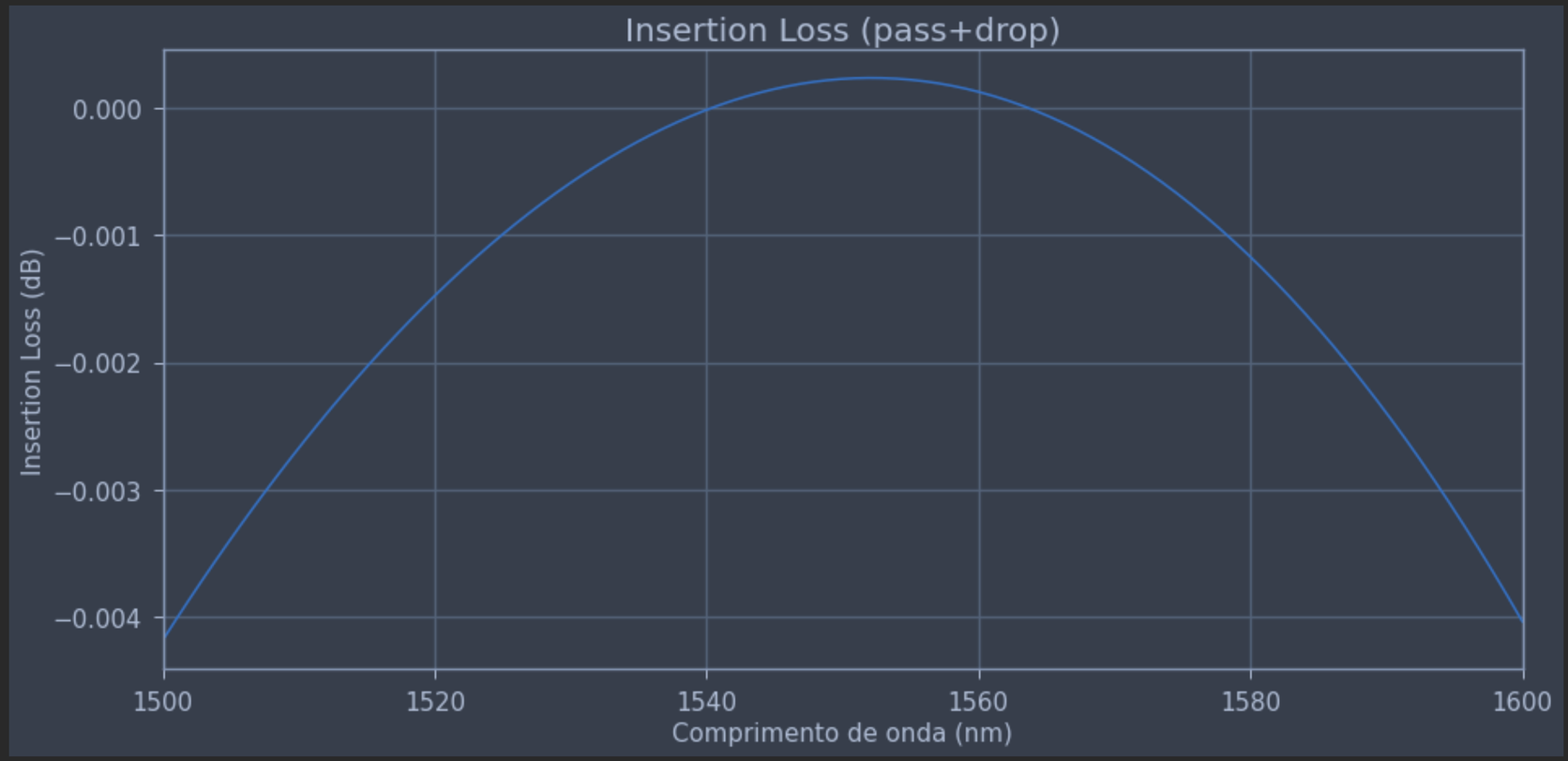
DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação FDTD otimizada



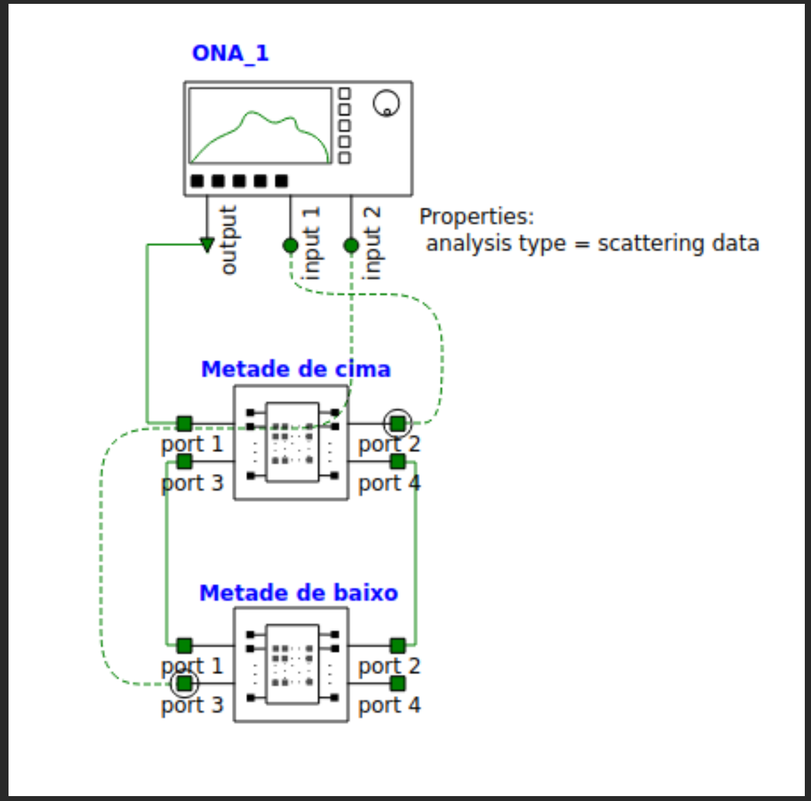
DESIGN DE UM ANEL DE RESSONÂNCIA

Simulação FDTD otimizada



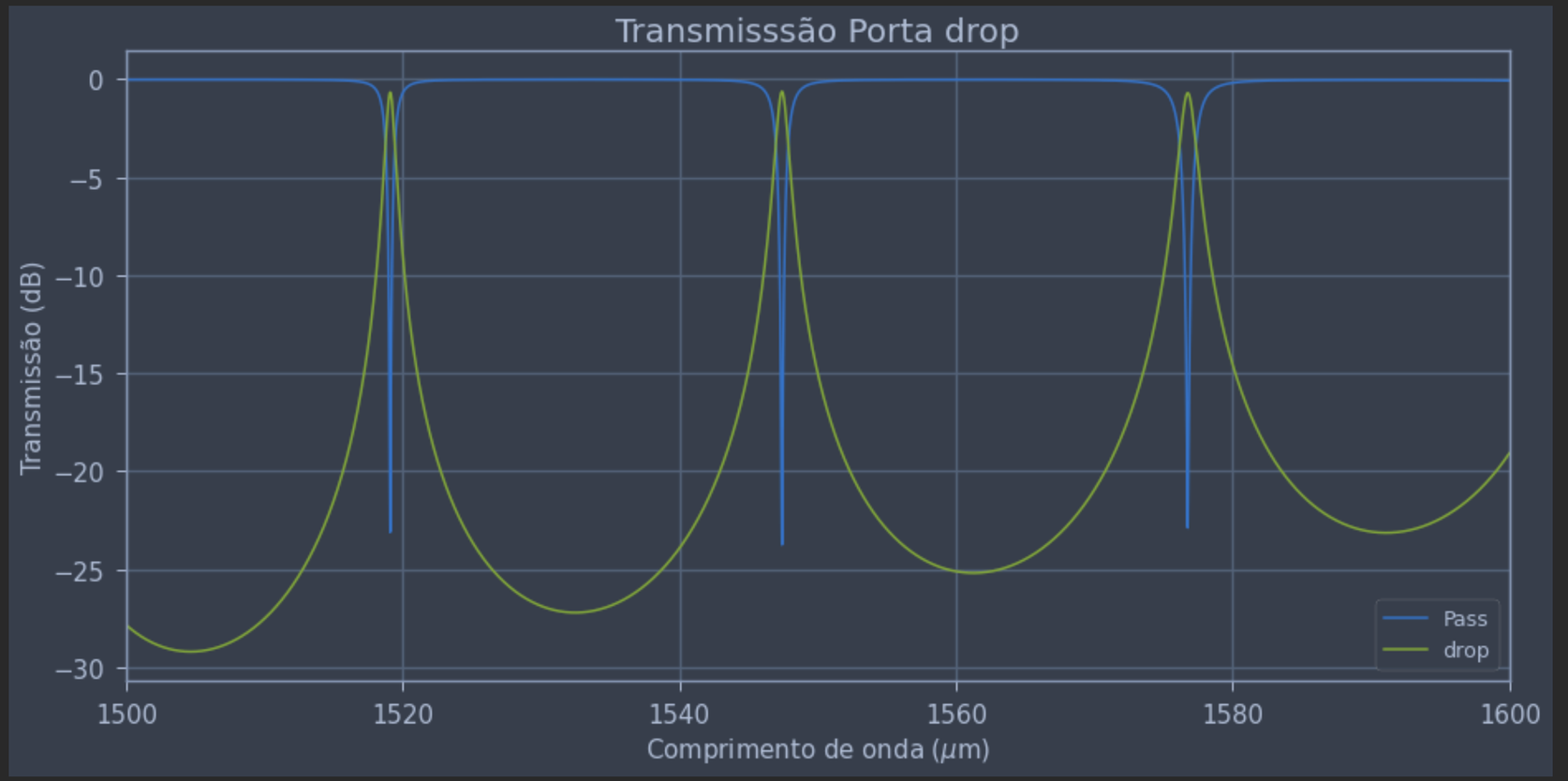
DESIGN DE UM ANEL DE RESSONÂNCIA

Export Interconnect



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

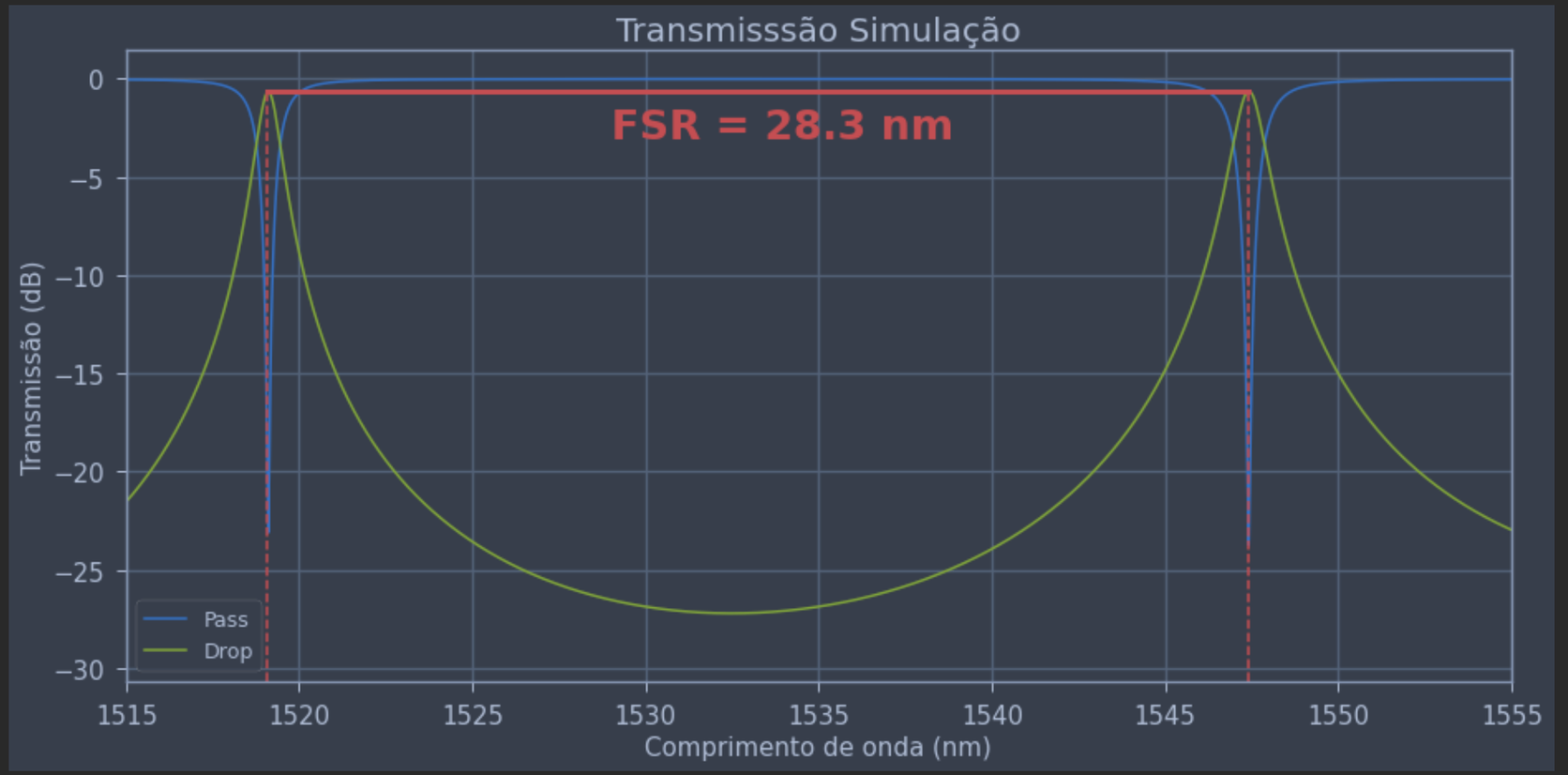


DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados

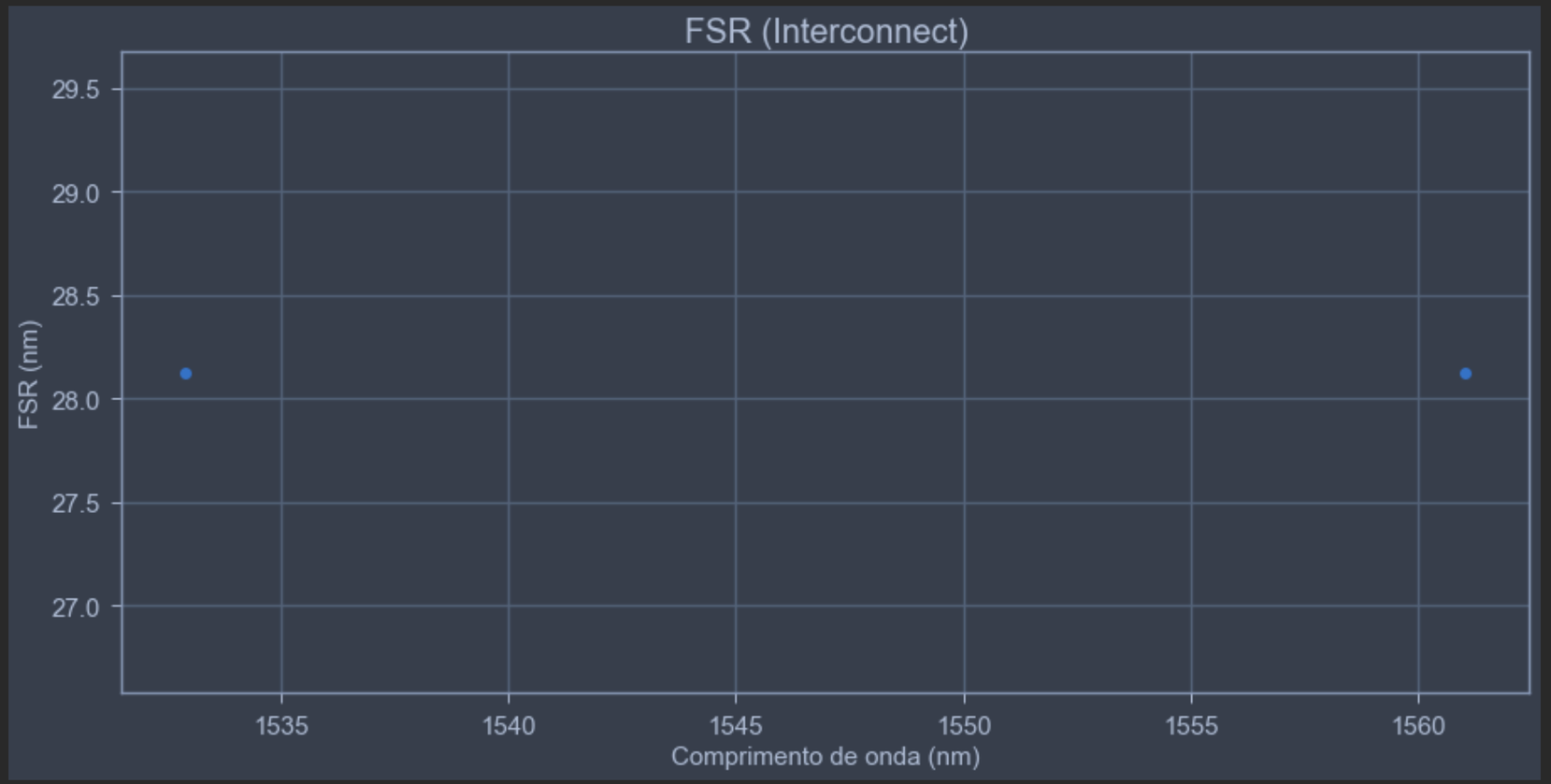
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



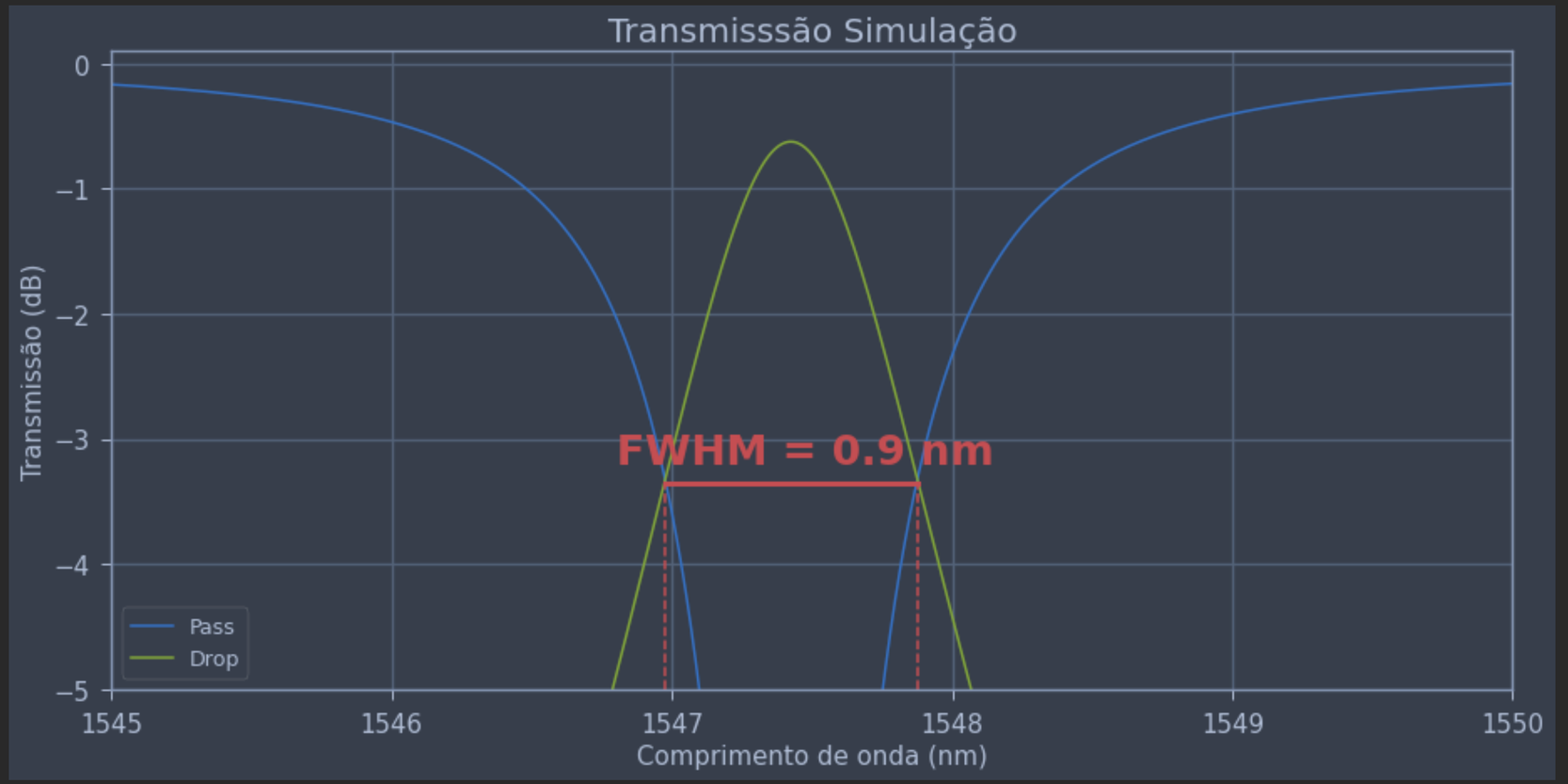
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



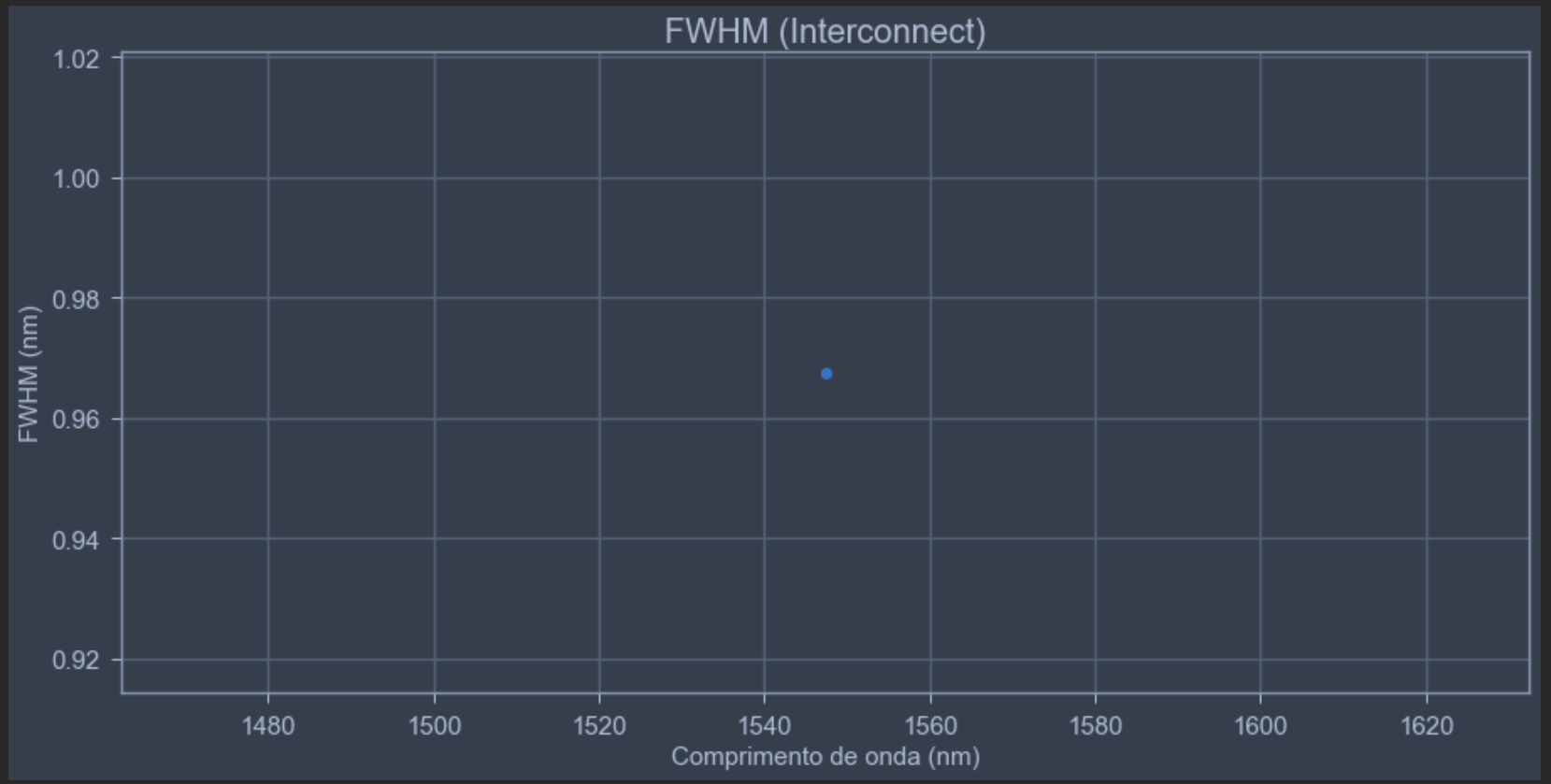
DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados



DESIGN DE UM ANEL DE RESSONÂNCIA

Resultados finais do modelo 1

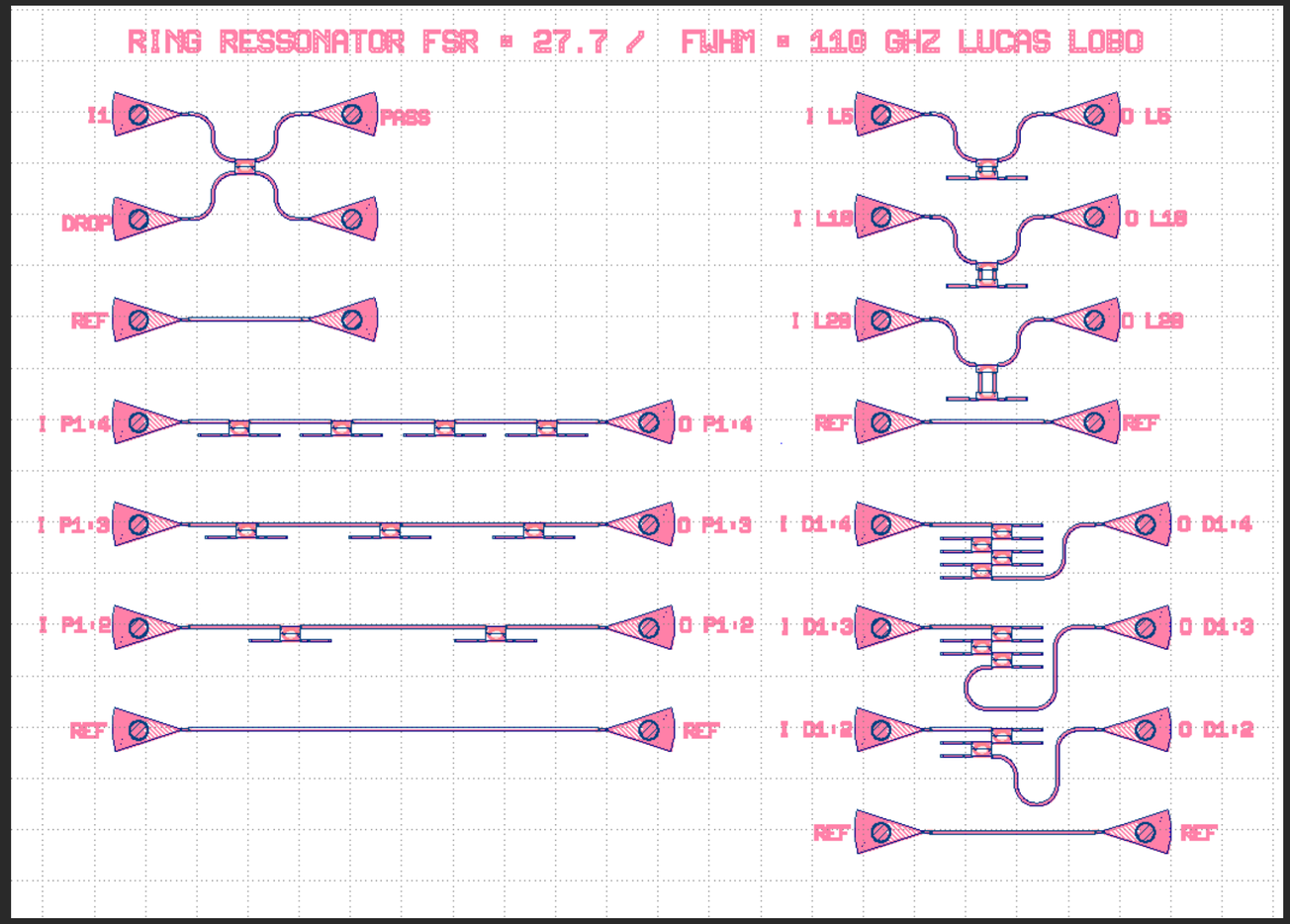
Teorico	Obtido
FSR = 27.7 nm	FSR = 28.3 nm
MWHW = 0.88 nm	MWHW = 0.9 nm
Finesse = 31.48	Finesse = 31.44
Q factor = 1761	Q factor = 1722
SOI in SiO2	Buried in SiO2

SEMANA 6

Design do chip

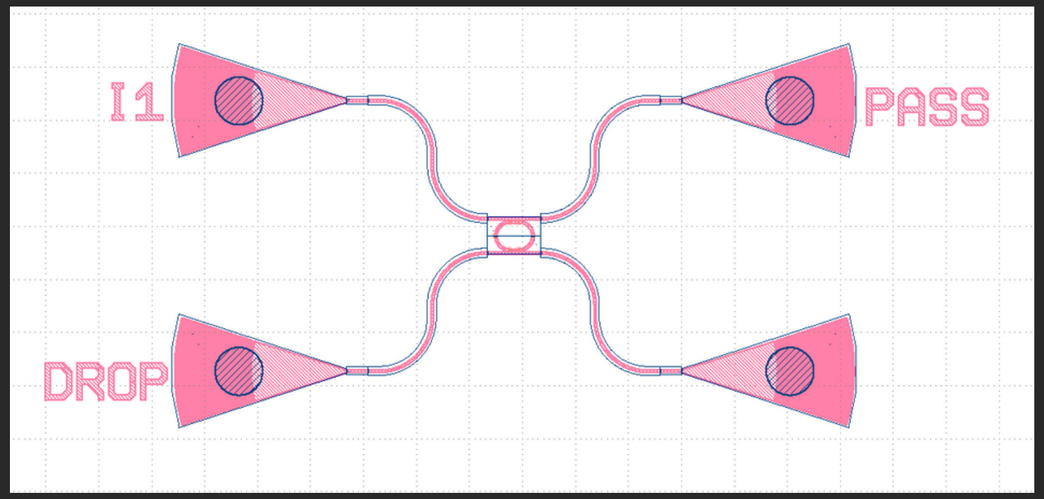
DESIGN DE UM ANEL DE RESSONÂNCIA

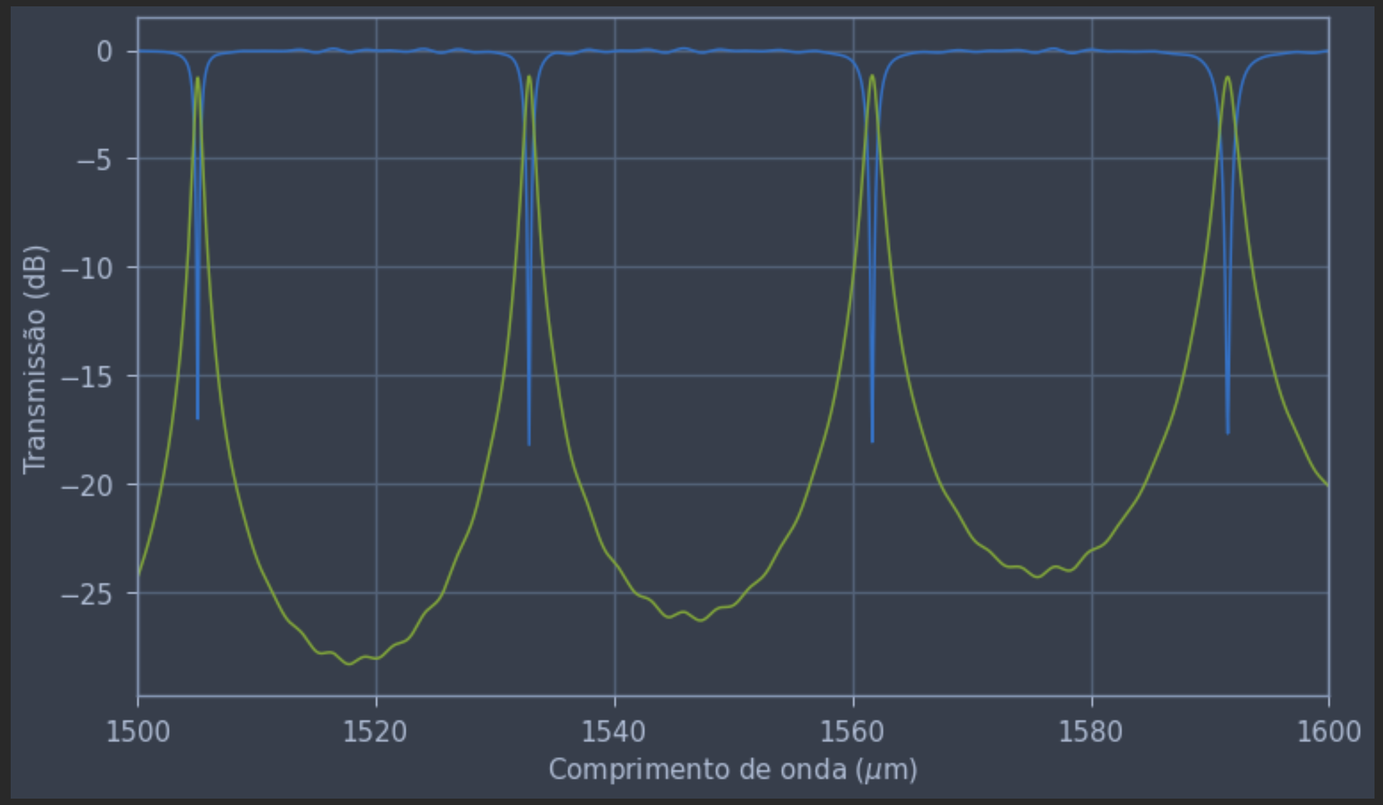
Chip completo



DESIGN DE UM ANEL DE RESSONÂNCIA

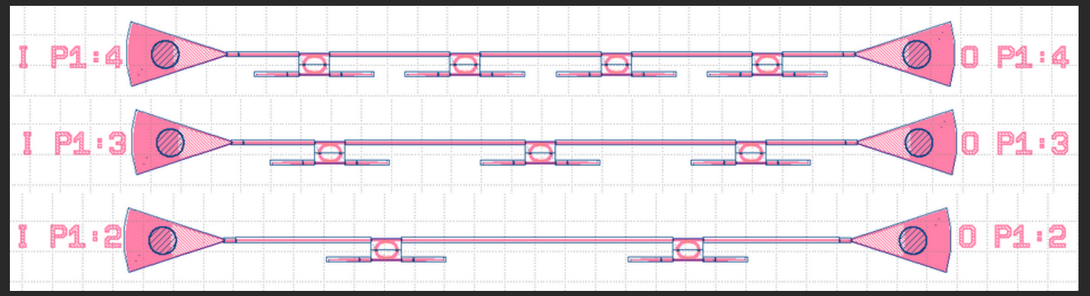
Circuito basico

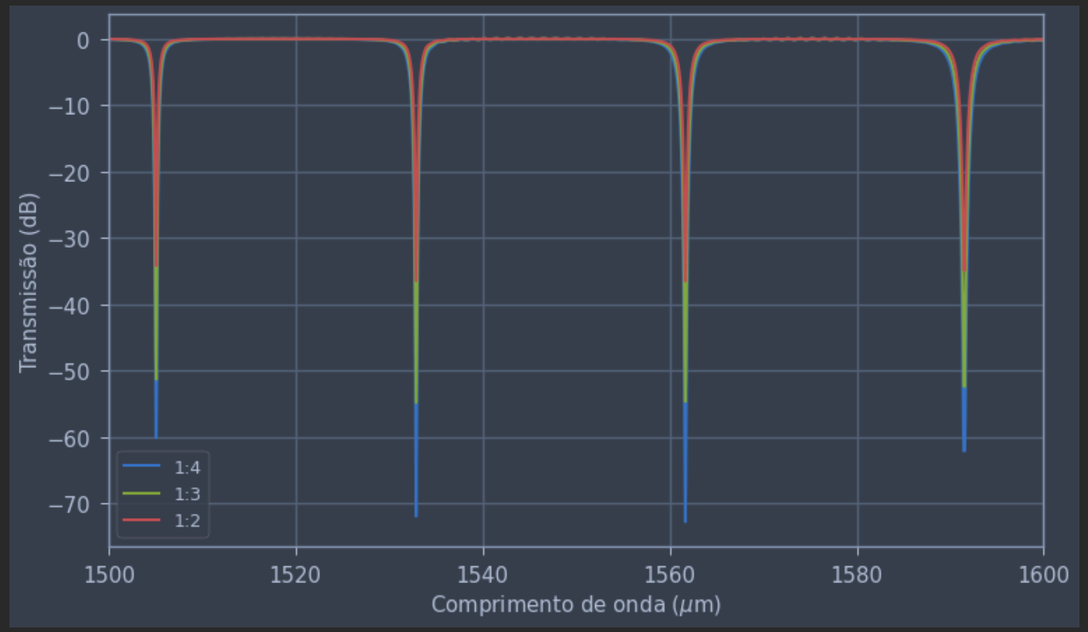


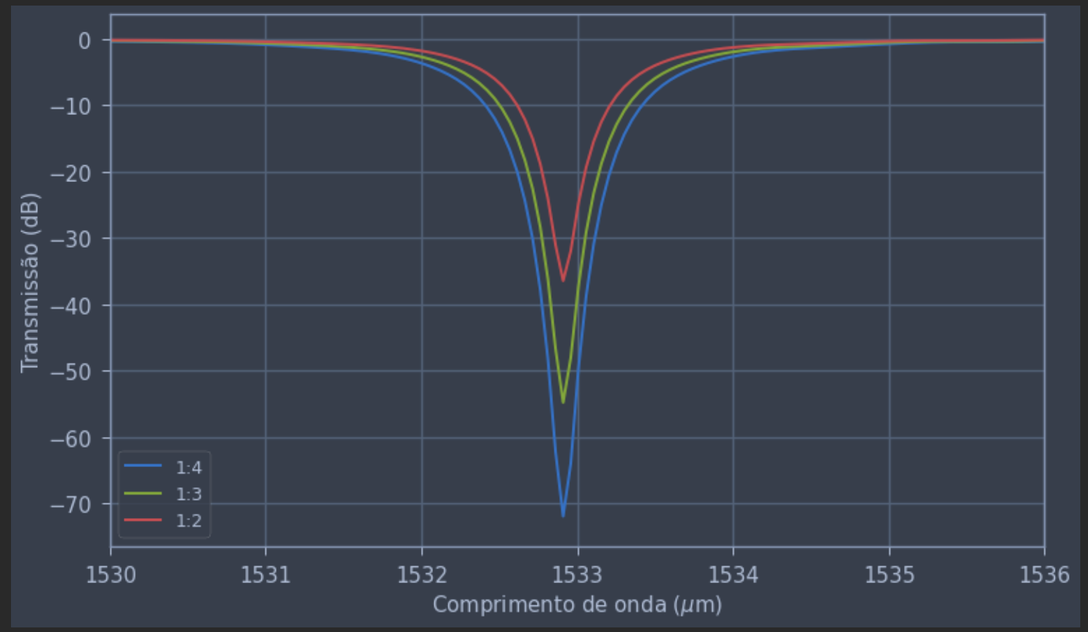


DESIGN DE UM ANEL DE RESSONÂNCIA

porta Pass em cascata

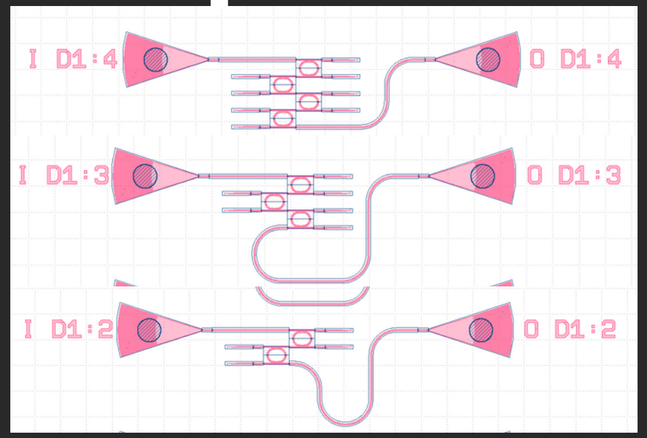


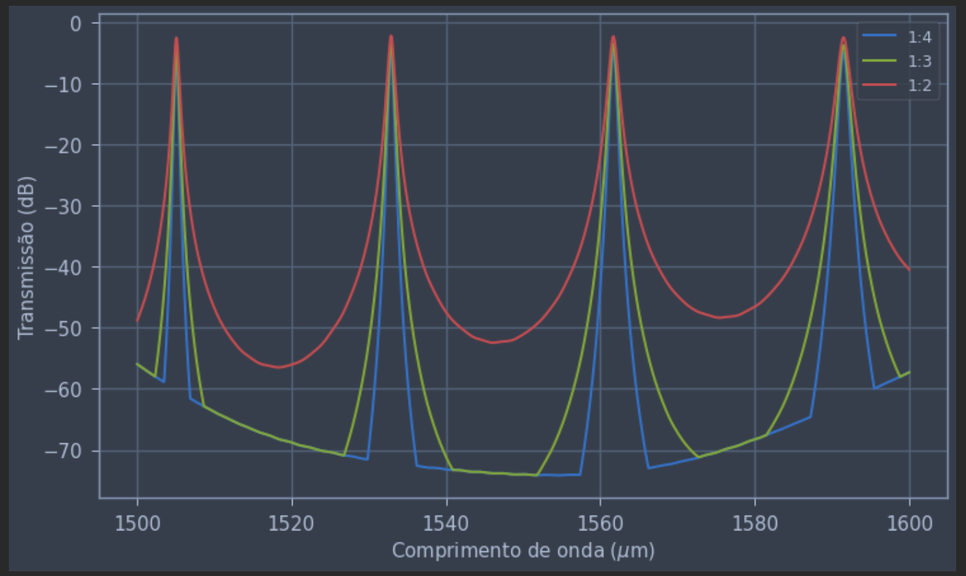


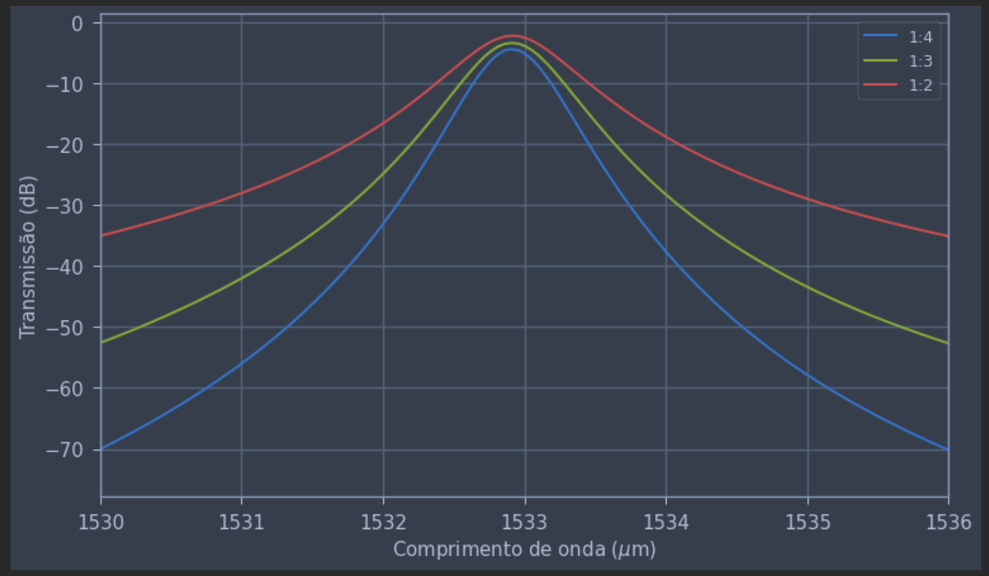


DESIGN DE UM ANEL DE RESSONÂNCIA

porta Drop em cascata







DESIGN DE UM ANEL DE RESSONÂNCIA

Aumento do comprimento do anel