

Chip 2 / Project 2

Goal: MZI w/ 25 GHz FSR at $\sim 1310\text{nm}$

same as chip 1, except:

- device is air cladded
- different fab, so different pdk
- using on-chip laser

Process:

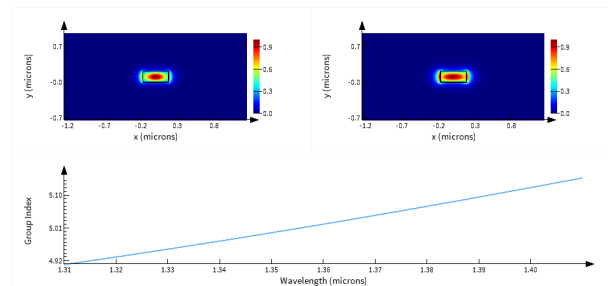
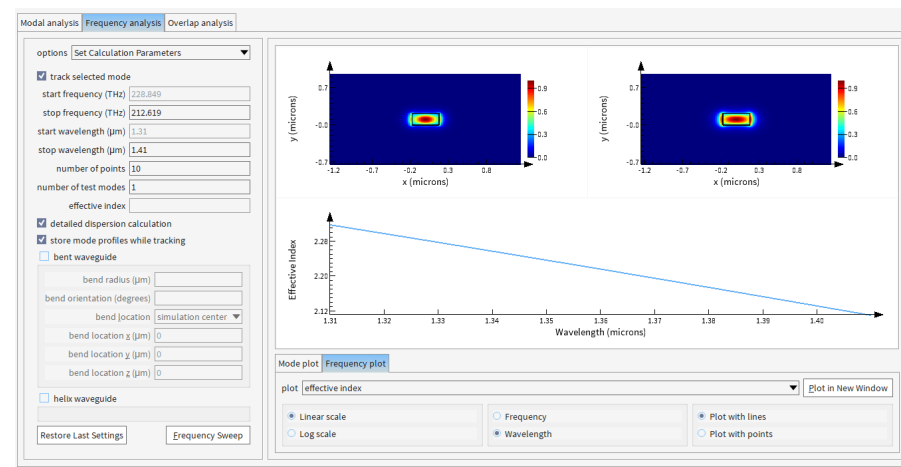
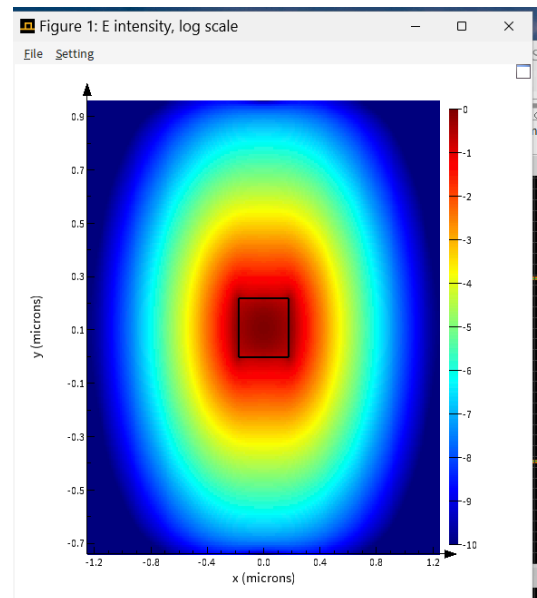
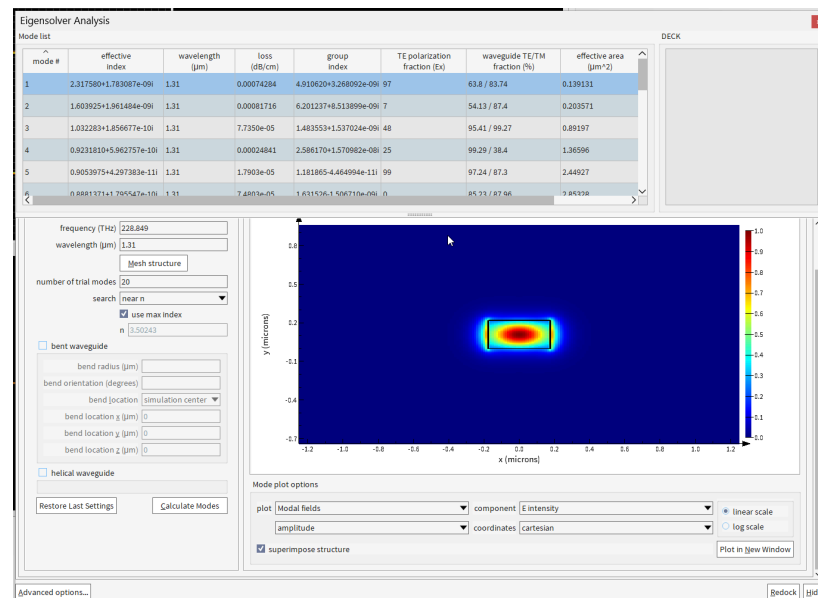
① Simulate wave guide w/ air cladding in Lumerical MODE

- wave guide itself still silicon, $350\text{nm} \times 220\text{nm}$ using same 350nm width
- air cladding - disable SiO_2 cladding

$$n_{\text{air}} = n_{\text{vacuum}} = 1.0$$

- eigensolver analysis yields

$$n_g = 4.910620$$

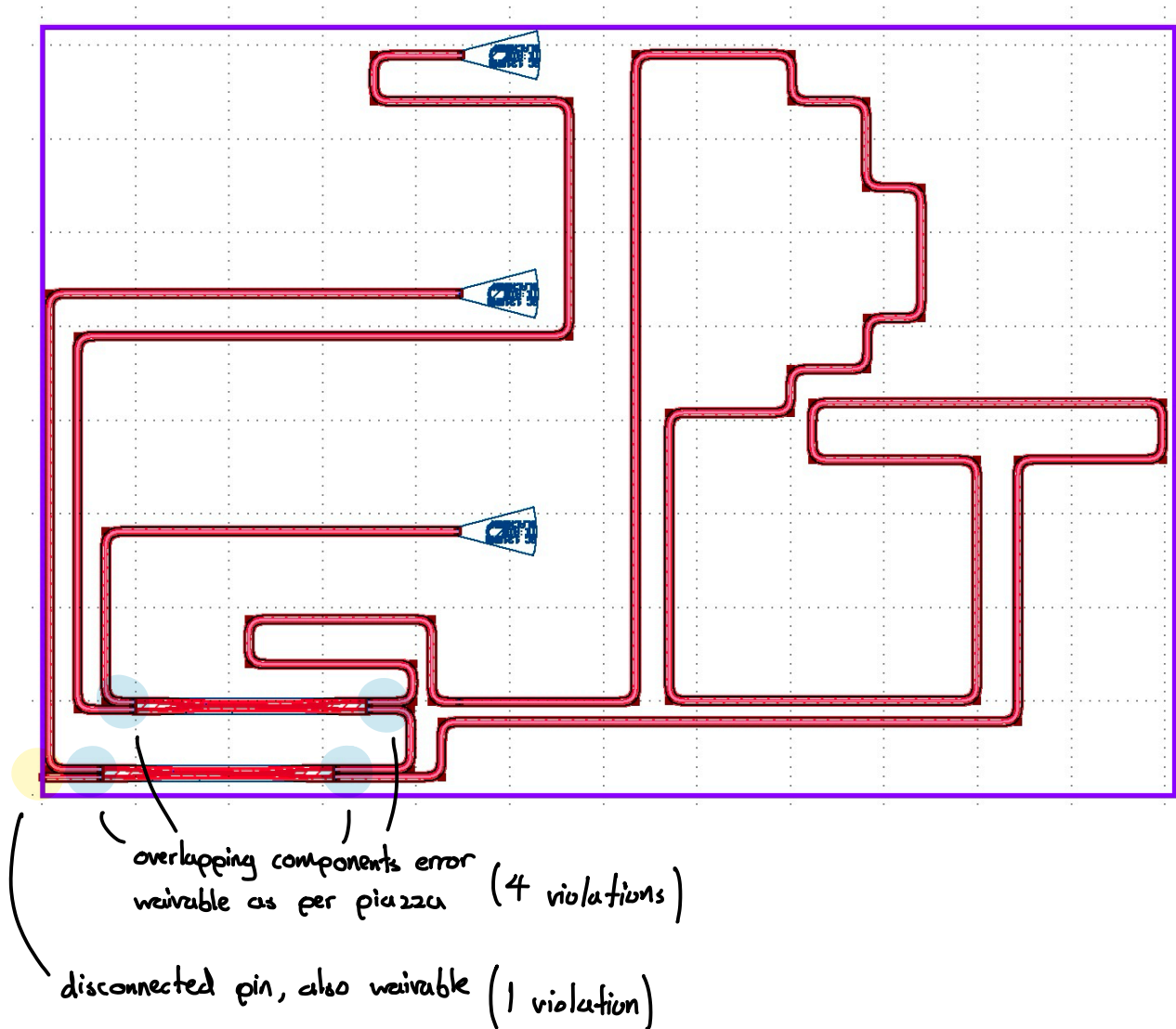


② Calculate required ΔL

$$\Delta L = \frac{c}{\Delta \gamma n_g} = 2.442 \text{ mm}$$

③ Physical design in klayout

- using EBeam_ZEP PDK library
ebeam_6L_Air_TE1310_BB
350nm x 220nm @ 1310nm wave guide
EBeam_directional_coupler_surgassist_te1310
- Floorplan: 605 μm x 410 μm
- input wave guide at (0, 10) μm



5 violations, but are all waivable

④ Lumerical INTERCONNECT simulation

to be completed...