

Design Review Report: EBeam_TR_770

Design Name: EBeam_TR_770

Key Components: MZIs, Ring Resonators, Spiral Waveguides, and Calibration structures.

1. Design Concept & Methodology

- **Test Structures:** The layout looks solid. There is a good variety of test structures with appropriate parameter sweeps (e.g., varying phase shifter lengths in the MZIs), which should provide a clear range of Free Spectral Range (FSR) data.
- **De-embedding:** You've correctly included de-embedding structures (straight waveguides connecting two grating couplers). These will be essential for calibrating out the system's insertion loss during measurement.

2. Manufacturability (DRC & Safety)

- **Design Rules:** Most waveguide widths and spacings look consistent. Since this is for E-Beam lithography, just double-check that the gaps in your coupling

regions are strictly above the **60 nm** limit.

- **Process Variations:** The use of smooth, large-radius bends instead of sharp corners is a plus. This should make the design much more resilient to standard process variations and reduce scattering loss.

3. Mask Layout Quality

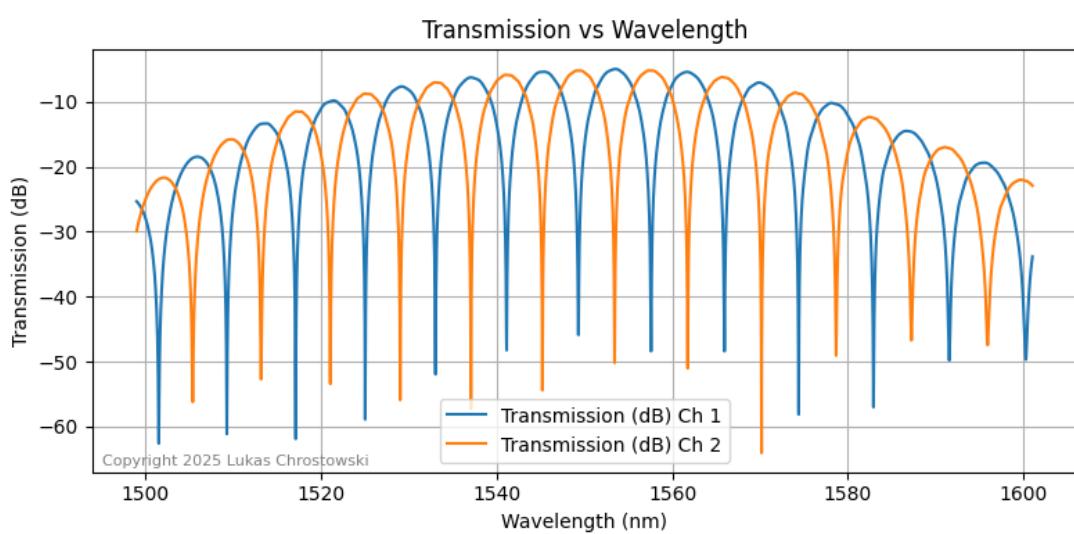
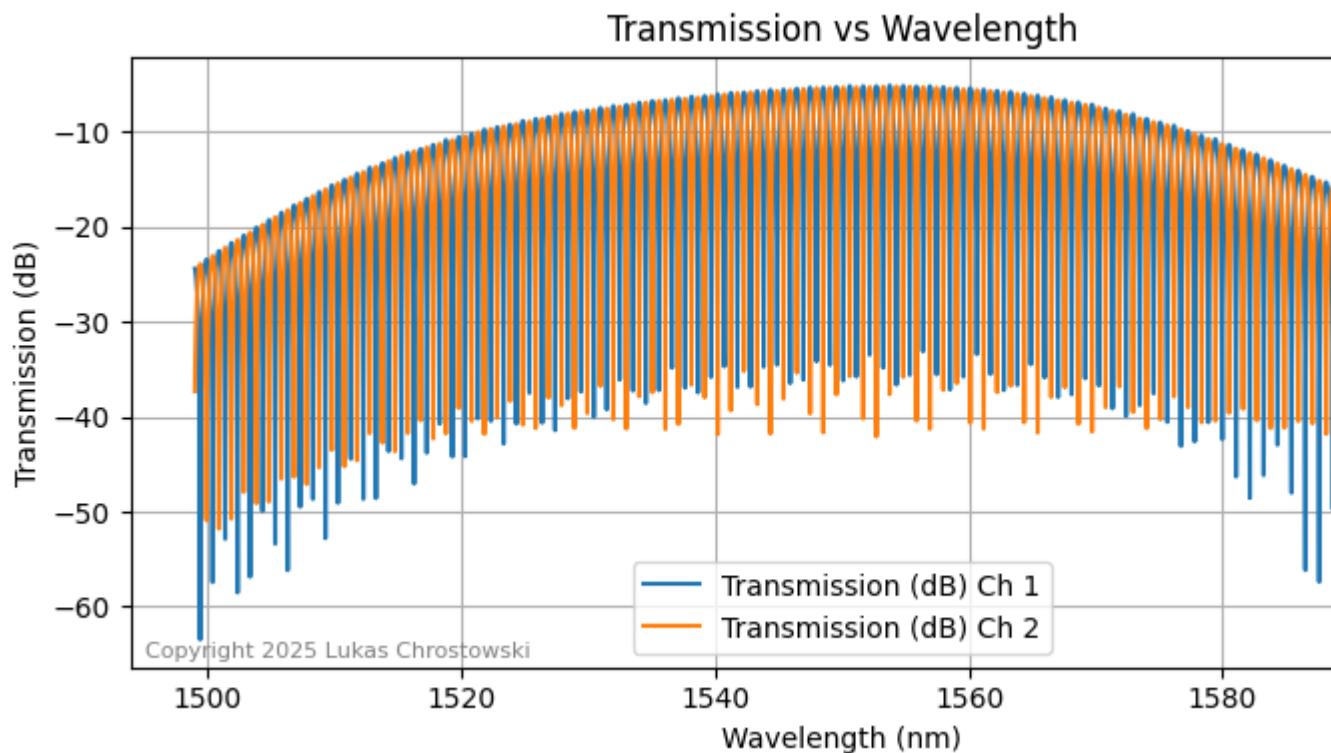
- **Connectivity:** All waveguide paths appear continuous and properly converted to smooth curves. There are no 90-degree "sharp" angles, which is great for maintaining low optical loss.
- **Cross-talk & Spacing:** The floor plan is well-organized. You've left enough "breathing room" (well over 100 μm in most spots) between independent devices to prevent unwanted optical cross-talk.
- **Efficiency:** The layout fits perfectly within the allocated yellow floor-plan boundary and utilizes the space efficiently without being overly crowded.

4. Design for Test (DFT)

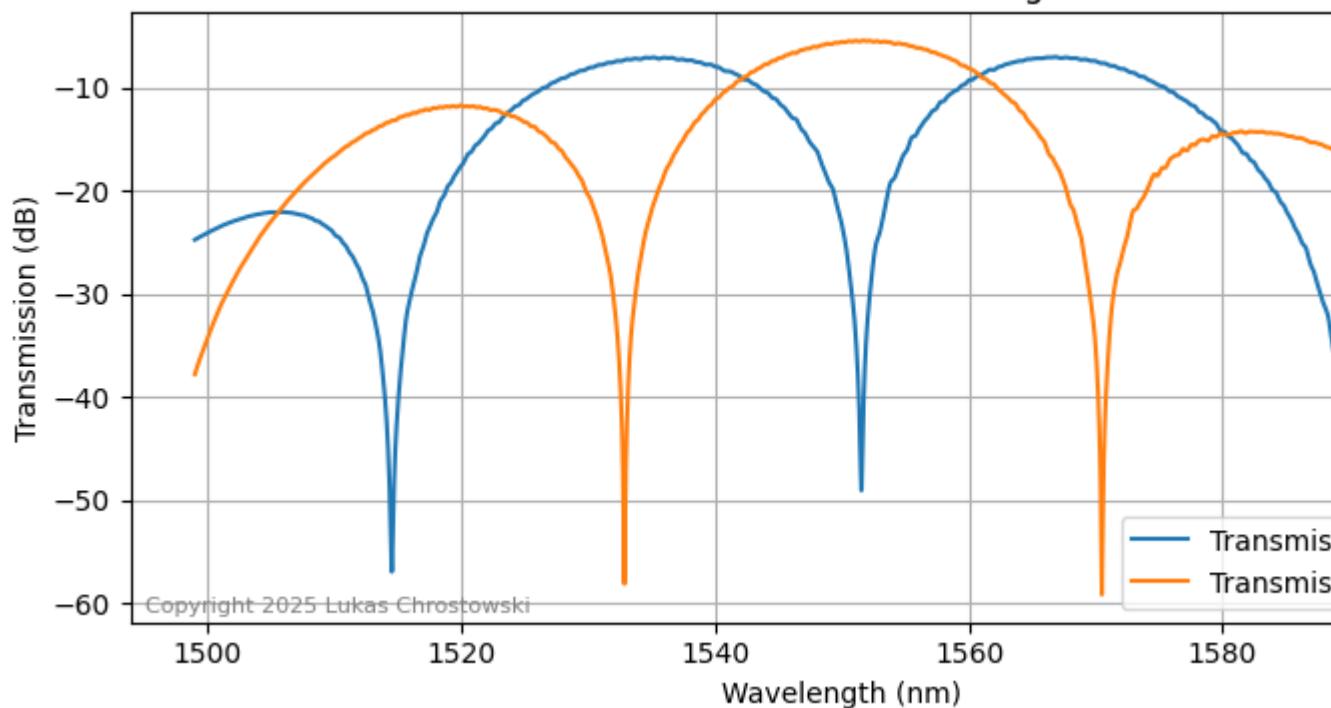
- **Grating Coupler (GC) Alignment:** The GCs are consistently oriented.
 - **Note:** Please verify that the pitch between the couplers is exactly **127 μm** (or your specific fiber array standard). Visually they look aligned, but precision here is key for the automated probe station.
- **Labeling (Action Required):** This is the main area for improvement. While I see an "MZ3" label in the center, many other devices seem to be missing unique text identifiers.
 - **Fix:** Ensure every device has a unique label on the correct layer so the automated measurement script can identify them.

5. Submission Requirements

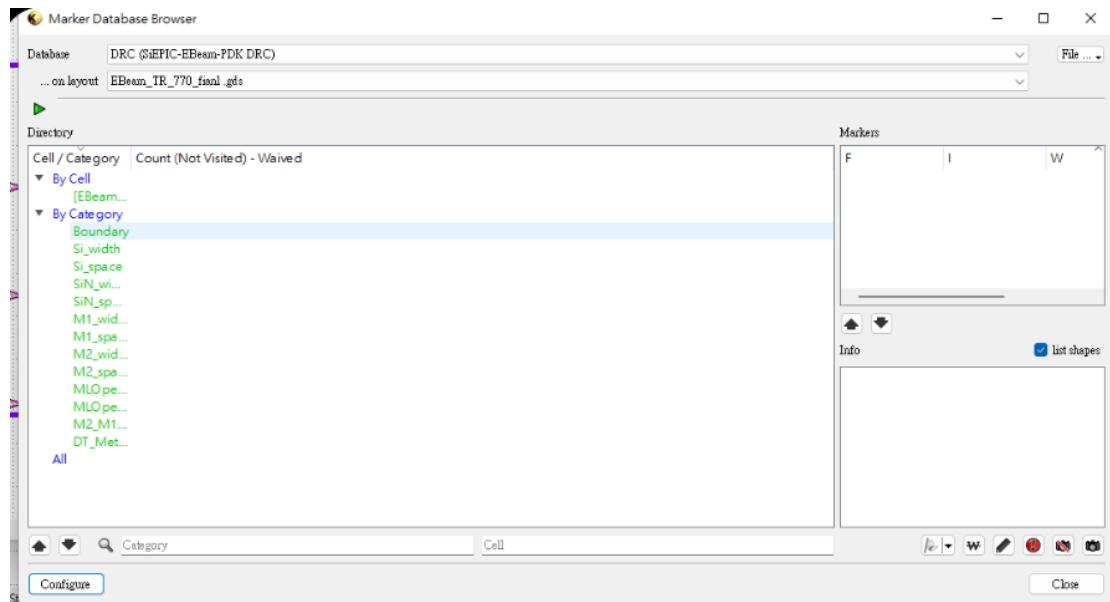
- **Naming:** The GDS filename and the top-cell name match (EBeam_TR_770), so no issues there.



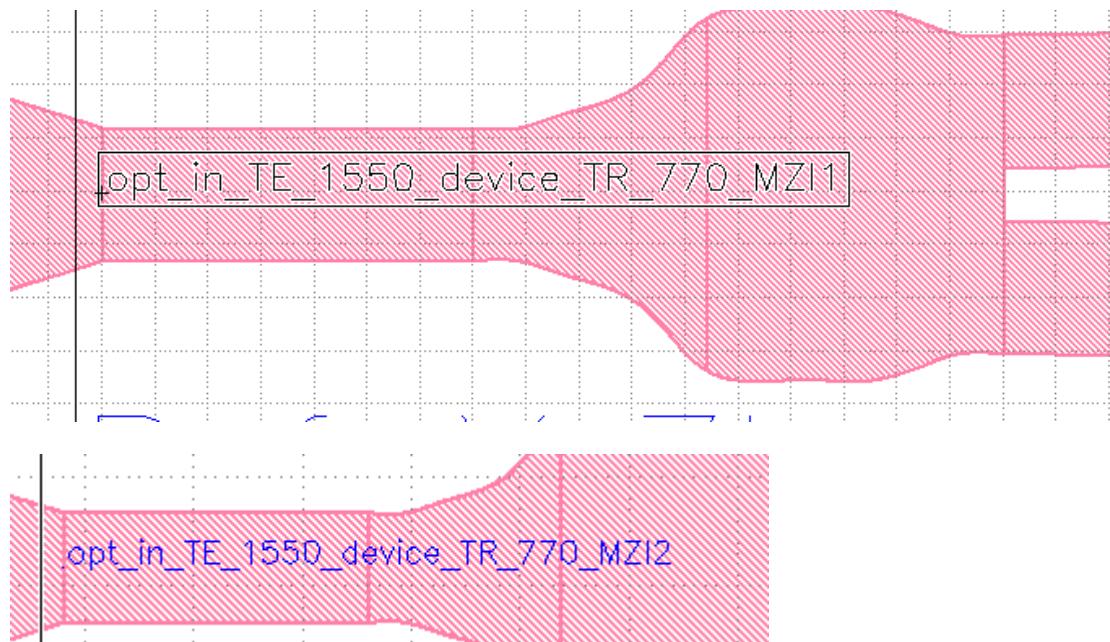
Transmission vs Wavelength

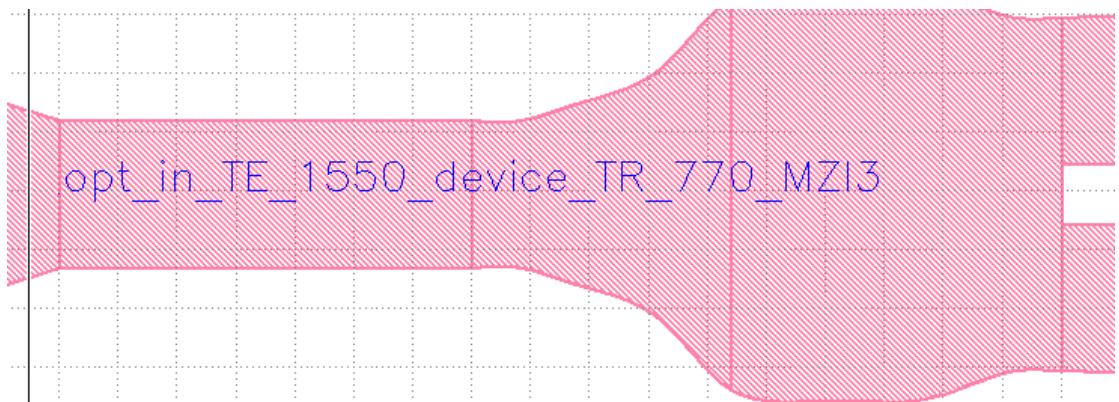


a "Si minimum feature size violation; min 60 nm" error in MZI6.:

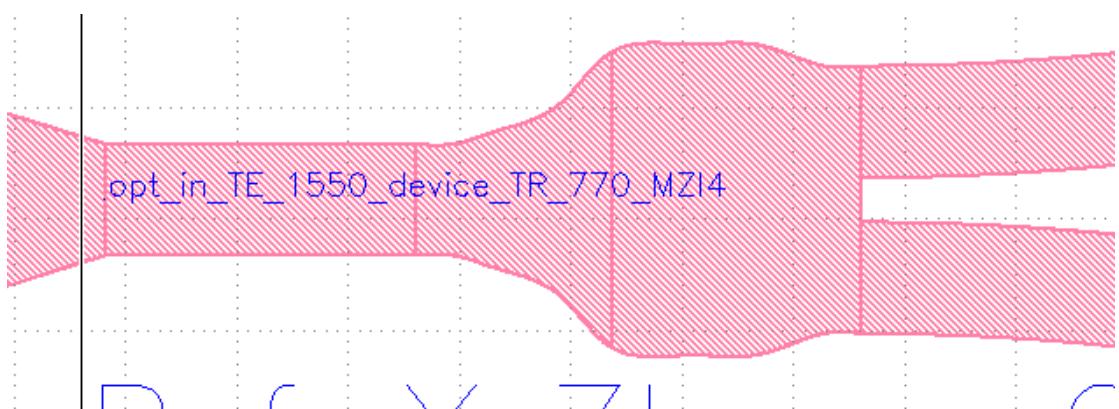


text labels for automated measurements:





R a f . Y h n n r



D C V T I

