

Laser mode beating suppression using a monolithic coupled etalon as an output couple

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Description and Objectives:

- Significantly improve space based laser reliability by reducing the harmful laser mode beating.
- Smooth laser temporal profile for improving laser altimetry measurement precision
- Single longitudinal mode laser.

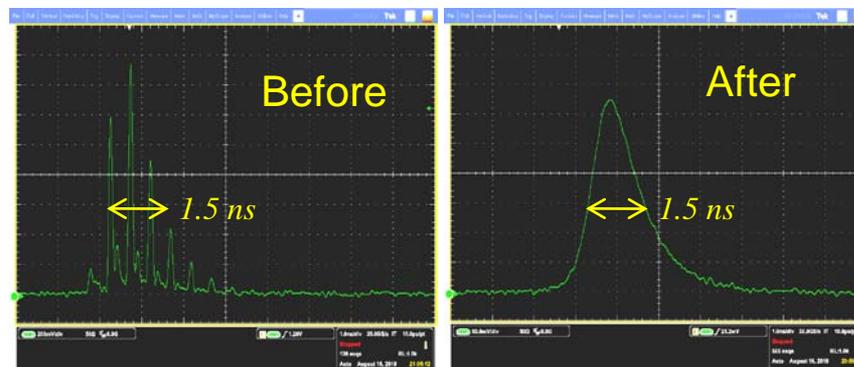
Key Innovation:

- Monolithic coupled etalon output coupler (MCEO)
- Wedged monolithic coupled etalon output coupler

Approach:

- Design and modeling the coupled etalon
- Construct multiple MCEOs using commercial off the shelf etalons for prove of principal experiments.
- Build breadboard laser and test with MCEOs
- Compare results using laser with standard OC and MCEO.
- Optimize the laser with customer designed MCEO

Results:



Laser pulse temporal profile

Application / Mission:

- ICESat-2 / Atlas laser
- OPG / OPA pump for trace gas sound and profiler applications
- LIST

Collaborators:

- Emily Wilson/ GSFC, 694
- Floyd Hovis / Fibertek Inc