



# LAT Calibration Hardware

## Strategy and Site Infrastructure Requirements

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# LAT-CH Scope (WBS 1.06.05)

- LAT-CH scope:
  - Optics tube testing (North America)
  - North American test build
  - On-site validation (commissioning)
  - On-site calibration (observing)
- Does NOT include
  - Calibration measurements that do not require specialized hardware (e.g. noise, Psat, etc)
- Multiple sets of calibration equipment will be fabricated
  - Can be customized for each site as needed

# On-site Telescope Validation

*(Cryo-free tests)*

<b>Test</b>	<b>Equipment needed</b>	<b>Site Infrastructure Notes</b>
Individual mirror surface	Laser tracker	Mostly off the shelf, could customize reflector movement and thermal gradient sensors
Multi-mirror alignment	Holography setup (tower, source, receiver)	Will need to provide tower spec
Pointing	Star camera	

# On Site Full-system Validation and Calibration

Test	Equipment needed	Site Infrastructure Notes
Far Sidelobes	Coherent sources	
Band properties	FTS (easily mounted/moved)	
Pol Angle	Options: tower, drone, or celestial	May use same tower
Pol Efficiency	Options: tower, drone, or celestial	May use same tower
Time Constants	Chopped source(s). [Do we need a hole in a mirror?]	Would be mounted near telescope mirrors

*(Main beams and gain calibration will come from celestial sources.)*

# Future Work and Open Questions

- Other groups working to define calibration requirements based on instrument-specific studies and flowdown from science targets
  - May be different at each site
- This will let us design site-specific calibration hardware and provide detailed site infrastructure requirements.
- Looking for feedback on...
  - Is anything missing from the measurement list or PBDR chapter?
  - What's the most important calibration hardware to design early?
  - Are there any other thoughts or concerns about LAT calibration hardware?