LIGO

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

SPECIFICATION

E040470 -00- D

Drawing No   Rev. Group

Sheet 1   of **2**

Ponderomotive Interferometer
End Mirror Substrate

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
AUTHOR: H. Armandula	**05/16/05**						
CHECKED: G. Billingsley							
APPROVED: Nergis Mavalvala							
DCC RELEASE							

Applicable Documents

LIGO-D040540 -B

Requirements

Physical Configuration

According to: LIGO- D040540 -B

Material

Fused Silica

Clear Aperture

Central 10 mm

Bubble and Inclusion Cross-section within the clear aperture

No bubbles or inclusions

Registration Mark

Registration mark, in the form of an arrow, shall be etched, ground or sandblasted to indicate the top surface of the optic corresponding to the phase maps required.

Final shaping

Shaping shall be performed using a progression of grit size ending with a 320 or smaller grit wheel.

Side and Bevel Polish

Sides and Bevels shall be polished. These surfaces shall appear transparent with no gray, scuffs or scratches visible to the naked eye when viewed in normal room light against a black background.

Scratches and Point Defects

There shall be no scratches, sleeks or point defects within the central 10 mm.

Inspection Method

Inspection of the central 10 mm diameter is performed with a dark field microscope.

Ponderomotive Interferometer
End Mirror Substrate

Surface Figure, measured over the central 8 mm diameter
  Surface 1: Spherical, concave
  ROC: 0.55 m concave ± .001m
  Surface micro-roughness: Superpolished ≤1 angstrom rms

  Surface 2: Nominally flat
  ROC: ∞**, >** 500m
  Surface quality 40/20

Data Requirements

  Vendor to provide an inspection sheet stating compliance with:
  Physical Dimensions
  Scratches and Point Defects
  Surface Figure – Interferometer maps to be provided – For the purpose of full surface maps the substrate shall be oriented such that the point of minimum thickness shall be at the top center of the data