# aLIGO ISC Optics: 2” +4.6m curved reflectors for low power operations

| APPROVALS | DATE | REV | DCN NO. | BY | CHECK | DCC | DATE |
|---|---|---|---|---|---|---|---|
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| DCC RELEASE | | | | | | | |

## 1 Description

Plano/Curved reflectors for HAM6 telescopes when operating the IFO in low power mode

## 2 Material

Corning HPFS 7980 (high purity fused silica, UV grade)
Grade 0G (or better)

## 3 Dimensions

**Diameter**: 2” +0.000/-.005”
**Thickness** (center): 0.375” ± 0.005”

## 4 Radius of Curvature (ROC):

Side 1: ROC R1 = + 4.6m ± 0.09m
Side 2: Flat

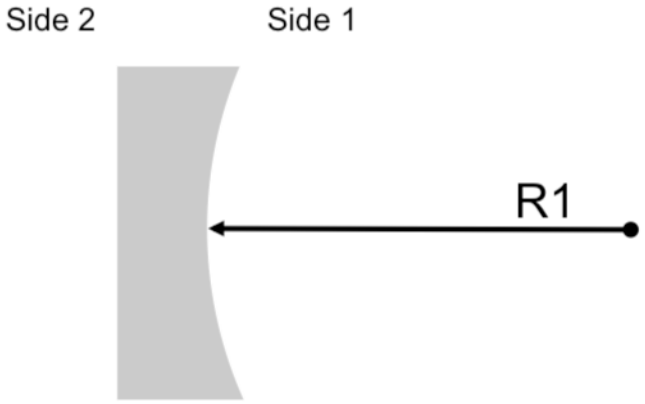


Fig2: Schematic picture of the curved optic. This picture has the only purpose of identifying the ROC of the optic and the two sides.

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## 5 Surface Roughness

**Side 1**
**Super-polished** less than 1 Angstrom over central 80% of diameter with 10-5 scratch-dig; best effort for 0/0 20-10 scratch-dig outside central 80% of diameter.
**Side 2**
**Commercial-polish**
Less than 5 Angstrom over central 80% of diameter
**Edges and Bevels**
**Commercial-polish**

## 6 Surface Figure

**Side 1**
Flat < λ/10 at 632.8 over central 80%
**Side 2**
Flat < λ/4 at 632.8 over central 80%

## 7 Coating

Wavelength: 1064nm
Angle of incidence: 0° -15°, p-pol

**Side 1**
T = 5% + 0.5% (not less than 5%)
**Side 2**
AR coating, R < 0.1% (best effort)

## Serial numbers:

Each optic will be serialized as follows:
E1201104 ROC = +4.6m, T=5%, S/N: 1 (2,3,4,5)

Serial numbers and registration marks shall be scribed or etched on the barrel of the optic for in-vacuum use.

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## Vendor to provide:

1. Three spectrophotometer graphs of the reflectance and transmittance of the HR coatings; one covering the spectrum from 500nm to 1200nm; the others, with increased sensitivity, showing wavelengths from 900nm to 1100nm and from 500nm to 600nm
2. Spectrophotometer graphs of the reflectance of the AR coating taken as cited above.
3. Measurement of the ROC of the substrate