



SPECIFICATION

70 x 60 mm, 15mmCC sapphire Q substrate

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
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Purpose: These Flat-Concave sapphire substrates are to be used in investigations into sapphire Q and thermal noise.

Applicable Documents: LIGO-D030385 15mm CC Sapphire Q Substrate

Material: HEMLITE or Better single crystal sapphire

Orientation: A axis ± 2 degrees

Diameter: 70.0 mm +/- 0.2 mm

Thickness: 60.0 mm +/- 0.2 mm

Wedge: 30 ± 5 minutes, parallel to the c axis of the material within 3 degrees

Other Mechanical dimensions: Bevel, cylindricity and runout to best commercial practice

Polish: All surfaces polished out of gray, including bevel and cylinder

Surface Figure side 1: Central hollow with depth of 5.0 mm +/- 0.2 mm

Offset of central hollow < 0.2 mm

Radius of curvature of hollow is 15.84 mm

Side 1 Hollow Figure Precision: $\leq 1 \lambda$ at 633 nm

Side 1 Hollow microroughness: $\leq 1A$, "best effort"

Side 1 Annulus figure, nominally flat $< \lambda / 4$, PV at 633 nm

Side 1 Annulus microroughness: Super-polished, $\leq 2 A$

Surface Figure side 2: Nominally flat, $\lambda / 4$, PV at 633 nm

Microroughness side 2: Super polish < 2 Angstroms RMS