Jefferson Lab Alignment Group

Data Transmittal

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DETAILS:

On December 8, 2020, Survey & Alignment (S&A) inspected a crystal and two glass blocks for comparative quality analysis. S&A was tasked with examining measures of flatness, parallelism and perpendicularity. As all objects were similar in size and shape, it was necessary to label each object as well as the individual sides on each object for reference. The sides were labelled with the longer sides being 1, 2, 3 and 6, with side 1 opposite 3, and side 2 opposite 6. Sides 4 and 5 are opposite and represent the ends. The following data is based on standard Geometric Dimensioning & Tolerancing (GD&T) principles:

Crystal Feature Checks

Parallelism

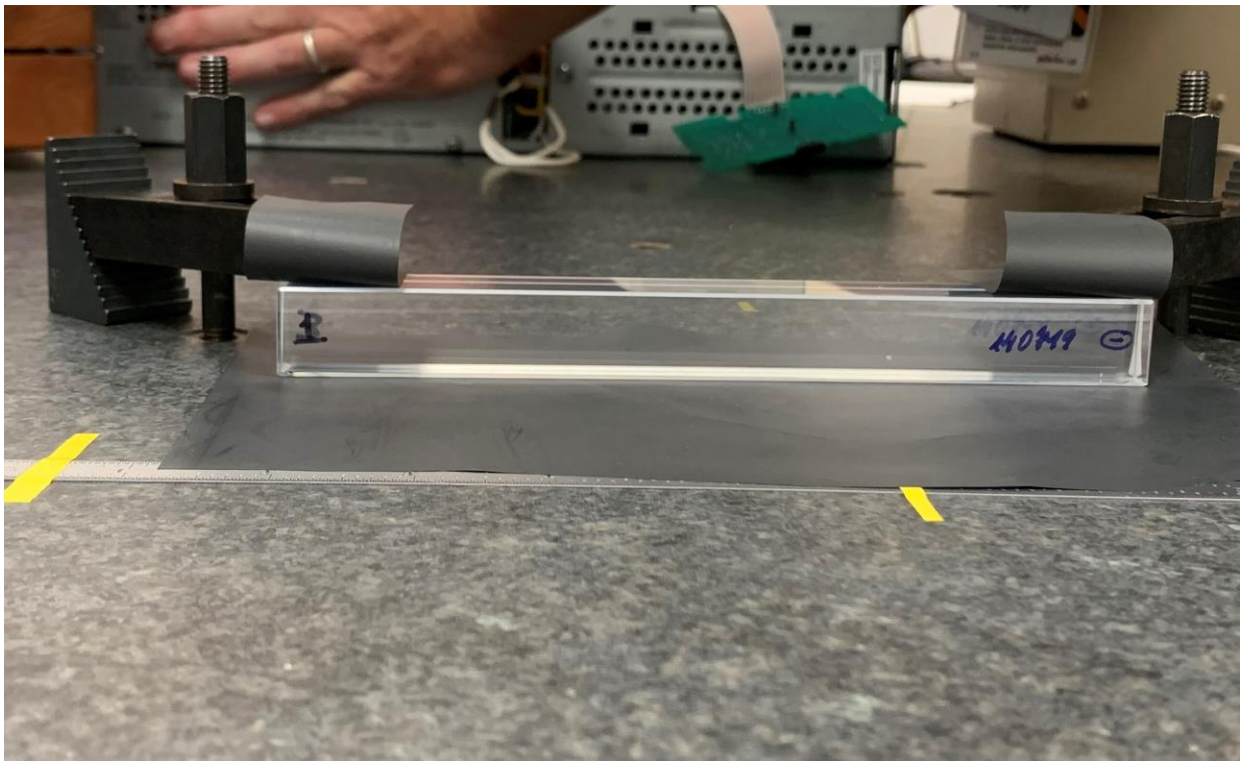
Reference Object (Datum)	**Feature**	**Value**
Plane 1 (A)	Plane 3	0.03 mm

Perpendicularity

Reference Object (Datum)	**Feature**	**Value**
Plane 2 (C)	Plane 1	0.04 mm
Plane 2 (C)	Plane 3	0.03 mm

Flatness

Feature	**Value**
Plane 1	0.02 mm
Plane 2	0.05 mm
Plane 3	0.02 mm
Plane 4	0.01 mm
Plane 5	0.01 mm



Glass 1 Feature Checks

Parallelism

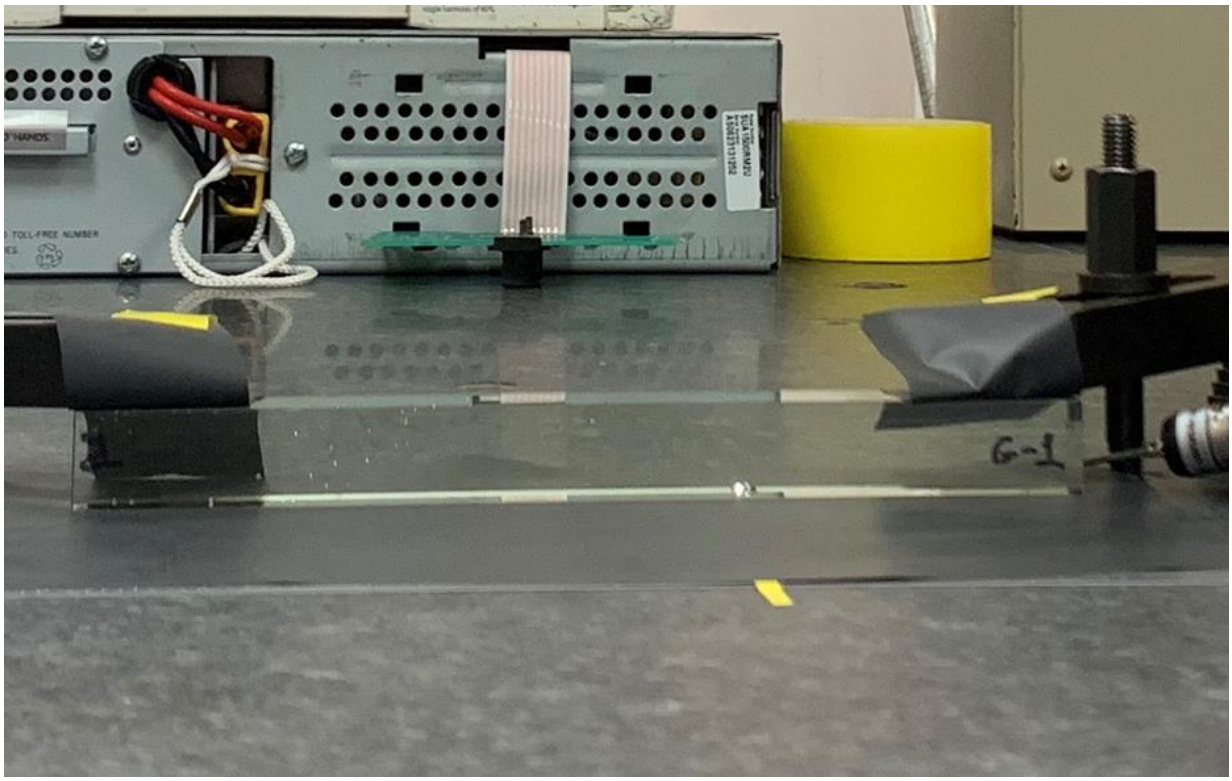
Reference Object (Datum)	**Feature**	**Value**
Plane 1 (A)	Plane 3	0.05 mm

Perpendicularity

Reference Object (Datum)	**Feature**	**Value**
Plane 2 (C)	Plane 1	0.01 mm
Plane 2 (C)	Plane 3	0.02 mm

Flatness

Feature	**Value**
Plane 1	0.01 mm
Plane 2	0.04 mm
Plane 3	0.02 mm
Plane 4	0.01 mm
Plane 5	0.01 mm



Glass 2 Feature Checks

Parallelism

Reference Object (Datum)	**Feature**	**Value**
Plane 1 (A)	Plane 3	0.14 mm
Plane 2 (C)	Plane 6	0.18 mm

Perpendicularity

Reference Object (Datum)	**Feature**	**Value**
Plane 2 (C)	Plane 1	0.16 mm
Plane 2 (C)	Plane 3	0.07 mm
Plane 6 (A)	Plane 1	0.13 mm
Plane 6 (A)	Plane 3	0.06 mm

Flatness

Feature	**Value**
Plane 1	0.14 mm
Plane 2	0.05 mm
Plane 3	0.05 mm
Plane 4	0.01 mm
Plane 5	0.01 mm
Plane 6	0.09 mm