My abreviated Angle Cube conformance test

Posted by dongriffith - 13 Sep 2011 22:42

I have some results from my Angle Cube conformance test this week. These results apply only to the test article (my personal Cube), and while inferences can be made for other Cubes, there is certainly no guarantee. On the other hand, it is not unreasonable to expect similar results.

If and when I remember my ftp login I'll post the deviation plot.

A precision angle block set, master level, granite surface plate, and precision 360° tilt table were used. The Cube was tested for deviation from (0 to 45)° in 5° intervals, in CW/CCW directions, with angle blocks and surface plate, and from (10 to 20)° in 1° intervals, in CW/CCW directions, using the tilt table.

The surface plate test area and tilt table platen were level/perpendicular to 10 arc seconds. Ten arc seconds is approx. 0.17 arc minutes and approx. 0.003°. The errors contributed by the angle blocks and tilt table were negligible. The ratio of measuring equipment accuracy to the Angle Cube accuracy specification, ±0.2°, was >10 to 1 (much greater…).

My Angle Cube measurement results:

LEVEL Mode

No measurement exceeded 0.1° deviation from the reference angle.

No repeat measurement exceeded a 0.10° delta.

The Cube frame was square. The sensor was square to the frame. On the surface plate, with each side resting on the plate in-turn, each 90° rotation resulted in a display change of 90° through a 360° rotation. The Cube read 0.00° when inverted.

On the tilt table, each 90° rotation resulted in a display change of 90° through 360° of rotation. The Cube read 0.00° when inverted.

The display flipped when the angle exceeded ±90° from 0 or 180 to give a right-side-up view, as advertised.

ZERO (BEVEL) Mode

The Zero mode worked well. No bevel exceeded 0.1° from the true delta. One example: Starting from 0°, Cube rotated 20° CW. Display reads 20.00°. Tilt table at 340°. Press Zero. Display reads 0.00. Rotate tilt table CCW through 0° to 20°. True bevel (delta) is 40°. Cube reads 40.05°.

Conclusion: My test article meets the manufacturer's specification.

Additional notes: LEVEL Mode. The Cube was turned off and then back on at a new angle. The Cube "knew" where it was and indicated the new angle correctly.

Any mode: The display did not always reach stability right away. Sometimes as much as 15 seconds were needed, but generally 5 or so seconds was enough.

The magnets all held very well, but on a very smooth surface, one of my sides slid down the metal wall.

If anyone has questions, I'll be happy to explain where I went wrong…..

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Re: My abreviated Angle Cube conformance test

Posted by Razoredge - 14 Sep 2011 19:19

That is enough to convince me. Time to make another order.

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Re: My abreviated Angle Cube conformance test

Posted by wickededge - 15 Sep 2011 10:41

Awesome. Thank you for posting your results!

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Re: My abreviated Angle Cube conformance test

Posted by Salguod - 15 Sep 2011 11:32

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wickededge wrote:

Awesome. Thank you for posting your results!

+1 I was about to order an angle cube anyway, but it is nice to know that it passed independent testing and that it will work as advertised.

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Re: My abreviated Angle Cube conformance test
Posted by komitadjie - 15 Sep 2011 12:01

Dang, nice work! Your testing was quite a bit more comprehensive than mine, I just brought mine into work and used a sine bar to check it on our big surface plate.

Good to see it worked as promised!

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Re: My abreviated Angle Cube conformance test
Posted by edhead35 - 15 Sep 2011 18:18

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komitadjie wrote:

Dang, nice work! Your testing was quite a bit more comprehensive than mine, I just brought mine into work and used a sine bar to check it on our big surface plate.

Good to see it worked as promised!

I was going to do the same thing!!

Thanks for the great testing!

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Re: Testing the Cube
Posted by dongriffith - 15 Sep 2011 21:02

Thanks for the feedback, all.

@ edhead35 and komitadjie,

Don't let my test stop you from doing your own. If you did something similar, even if not as comprehensive, with instruments/reference standards that have better accuracies than the Cube, it

might still demonstrate reproducibility, and that the entire population of Cubes can be trusted. I'm sure iGAGING will be thrilled to learn that we have given our stamp of approval.

I used it today to ensure that a 19" instrument rack shelf was installed level and not one screw-hole off. Some instruments won't tolerate a tilt angle (introduces an offset reading) unless it is calibrated at that angle, and I don't feel like doing that!

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Re: Testing the Cube

Posted by Salguod - 15 Sep 2011 21:09

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Again, thanks for the test! One point that you made is that cube users have to WAIT a few seconds to get the most accurate reading. So that is something that all we should all be aware of. It is certainly worth waiting a few seconds to get a Wicked Edge!

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