London Vision Clinic ArcScan Insight 100 ICL Scanning and Sizing Protocol

Practical Guide Version 1.0

Disclaimer:

This practical guide was produced independently by

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Anterior Chamber Anatomy

The following images were obtained using very high-frequency digital ultrasound
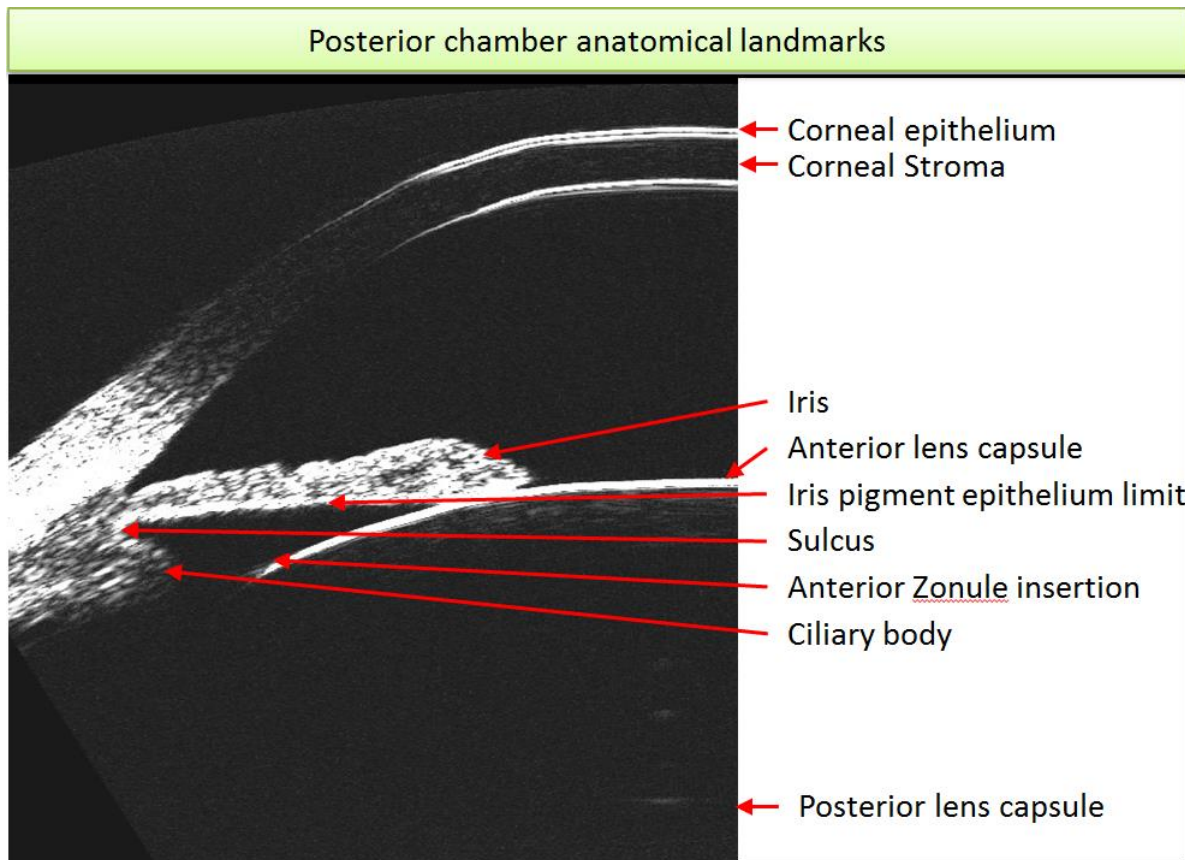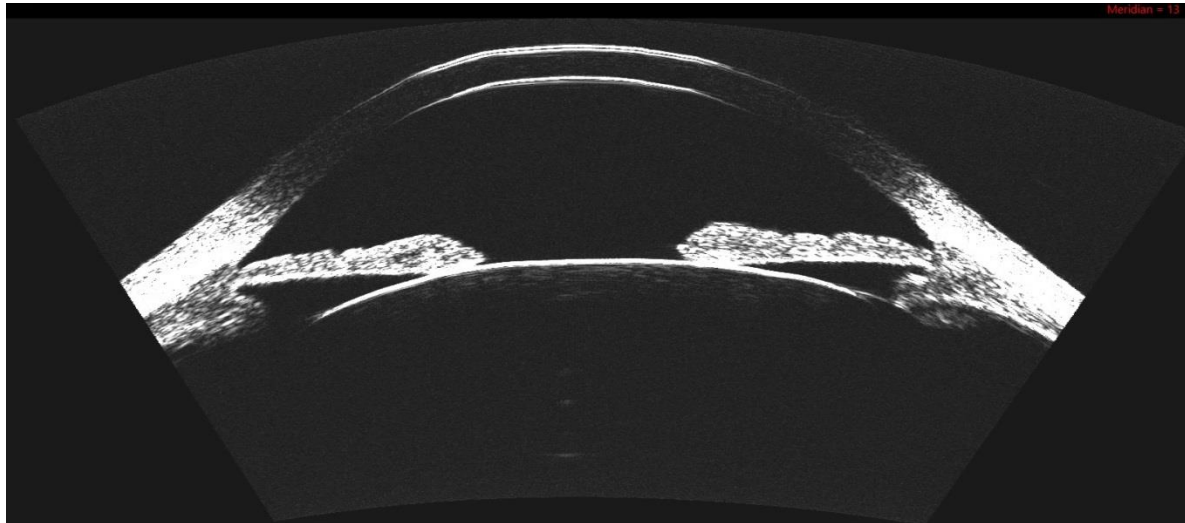
The sulcus is defined as the end-point of the iris pigment epithelial echo.

Pre-op Scan Protocol

*The following instructions and nomograms require use of the London Vision Clinic ICL Custom XML files. If you do not have the file installed on your device, please contact your ArcScan representative.

IMAGE OF THE SELECTION

ArcScan Insight 100 software has seven main pages, accessed through the tabs on the upper left-hand side of the application window. Upon startup, the ArcScan Insight 100 software opens to the Patient Page. This page is used to enter patient information and obtain patient data.

Click on the Scan tab to open the Scan Page. The Scan Page is used to enter settings for and performing scans. Previous patient scans may also be viewed on the Scan Page in the Preliminary and Final Scan Set groups.

The anterior segment imaging procedure is identical to the procedure used for corneal imaging, except for the radius setting and the location of the focal plane. In anterior segment imaging, the radius is set to 14 mm during setup and the focal plane is set at the level of the depth of the ciliary body.

While the Insight 100 possesses an Auto-range mode, as user experience increases it becomes faster and easier to achieve optimal scans by manual centering and ranging. Due to the unique anterior chamber anatomy for every patient, it might be necessary to take multiple measurements while adjusting range and centration.

There are two scan sets that need to be performed on each patient.

Anatomy Scan: This scan set is used as a 'scout scan' to look for any abnormal anatomy that might affect the position of the ICL such as a ciliary body cyst. For this scan mode the arc radius is set to 20 mm and the device automatically performs a series of 7 images at spaced equally about the horizontal meridian from +30° to -30° (rounded to the nearest degree).

Nomogram Scan: This scan set is used to take additional measurements around the horizontal axis. These can be used to enter into available sizing nomograms (i.e. LoVC, Dougherty, Kojima). For this scan mode the arc radius is set to 22 mm and the device automatically performs a series of 7 images spaced equally about the horizontal meridian from +10° to -10° (rounded to the nearest degree).

We perform 1 ICL Anatomy scan set and 2 Nomogram scan sets for each eye. You may wish to perform more when starting in order to have enough acceptable images to take measurements from.

The images should then be evaluated to ensure they are of proper quality before measurements and analysis is performed. Parameters for determining good quality scans include motion and brightness checks. There should be no motion artifacts seen – most easily determined by looking at the smoothness of the image of the cornea and anterior surface of the crystalline lens. The brightness should be optimized in order to be able to clearly see necessary anatomy.

Scan Analysis

Only measurements near the horizontal (0°) meridian should be used for analysis, as all nomograms have been derived based on this information. In most instances, we recommend 'averaging' a number of clear and acceptable measurements taken from different meridians to ensure anatomy is uniform (e.g. no ciliary processes are sticking out in 1 meridian but not another). All posterior chamber parameters in each of the meridians should be measured and considered when determining which data to enter into the physician chosen nomogram (e.g. LoVC, Dougherty, Kojima). Each of the following measurements is recorded.
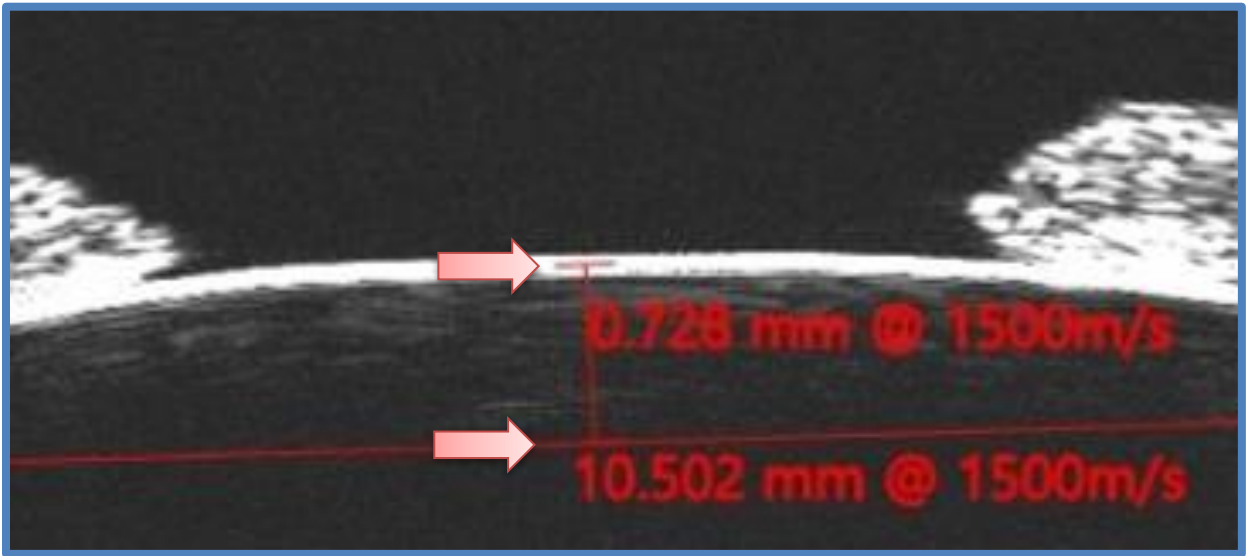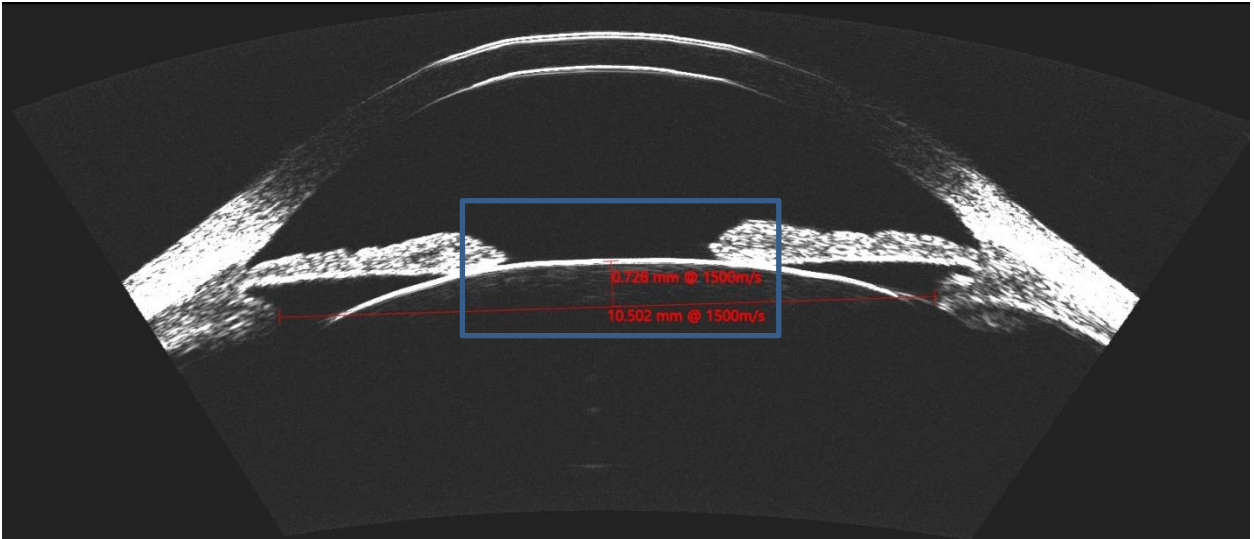
1. Sulcus-to-sulcus (STS)
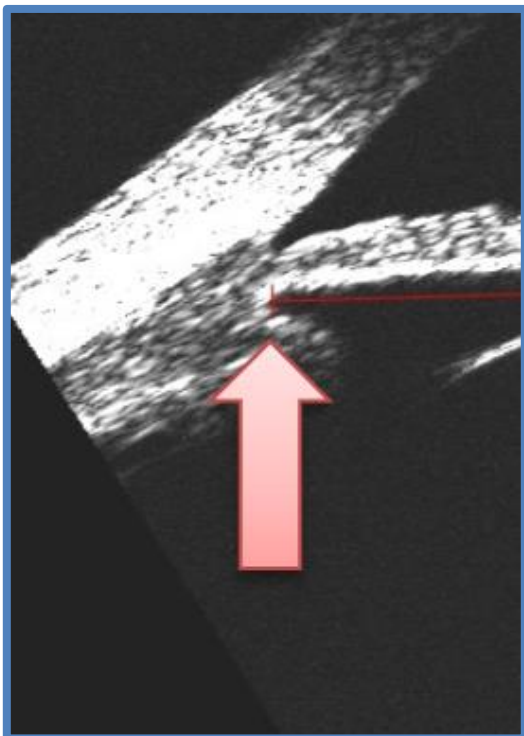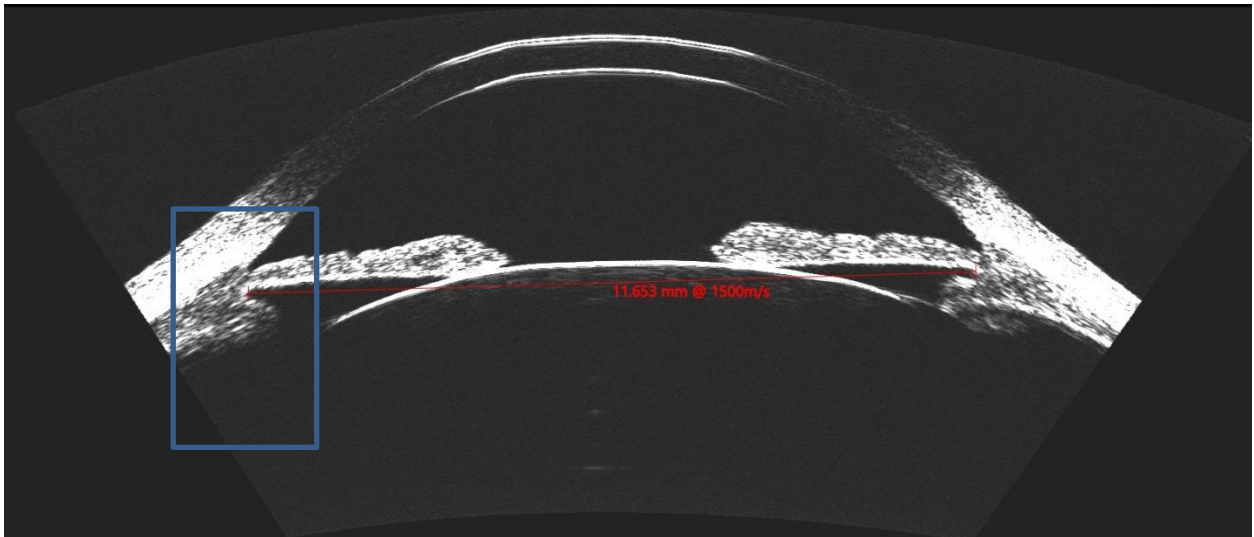
2. Sulcus-to-sulcus lens rise (STSL) – The distance between the sulcus plane and anterior lens capsule.
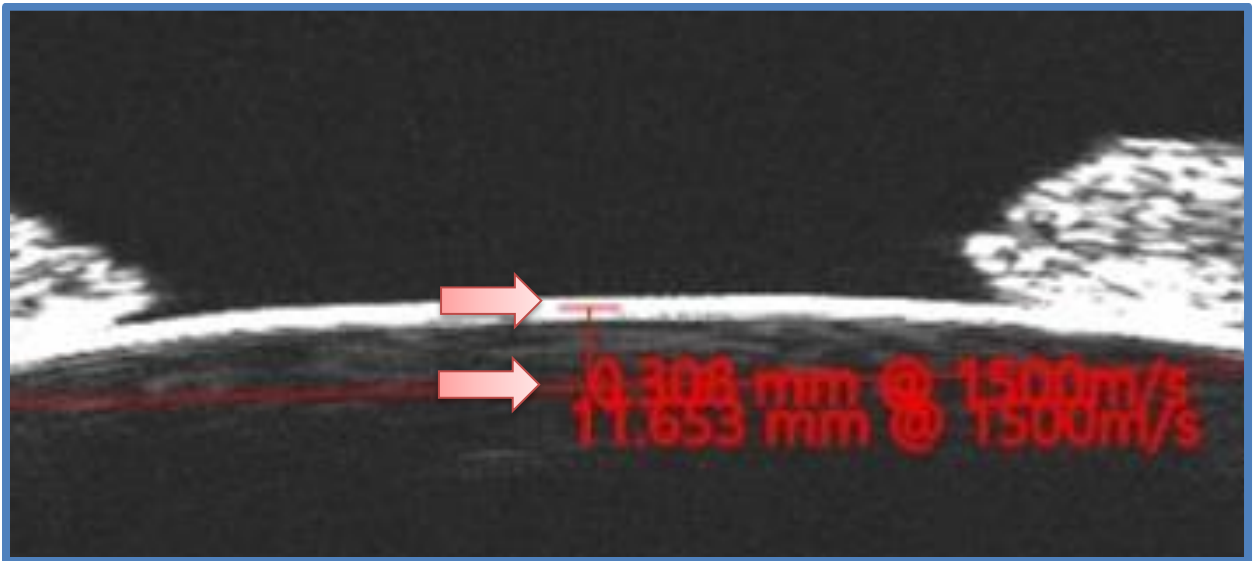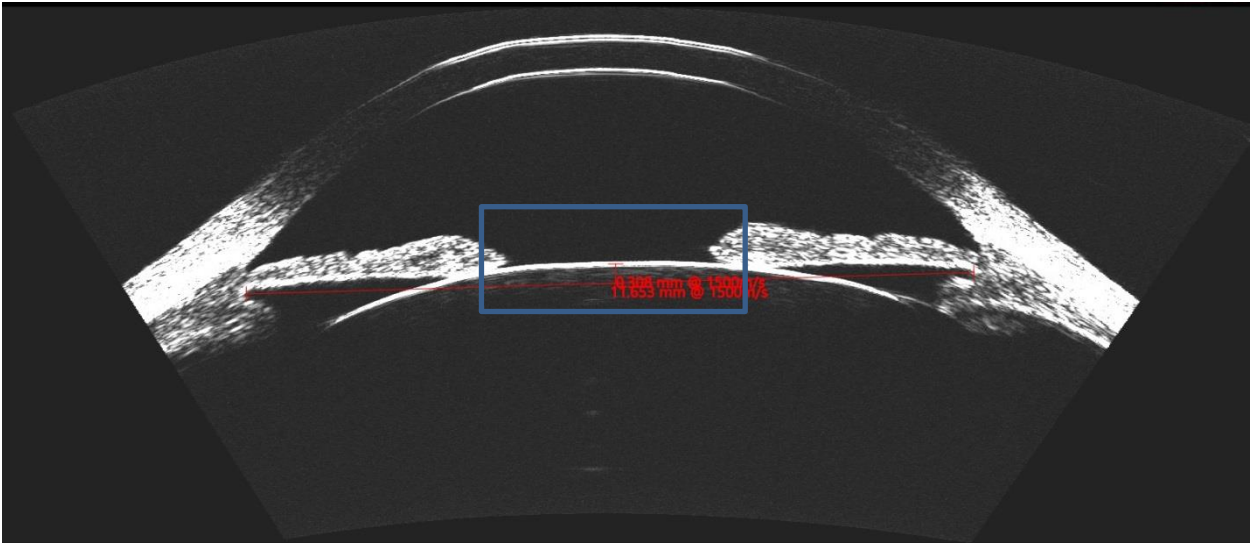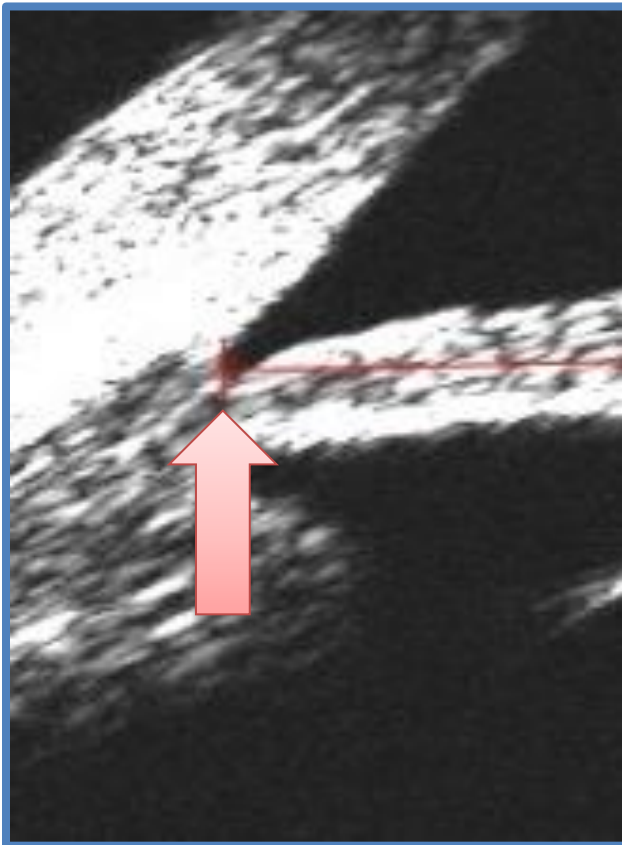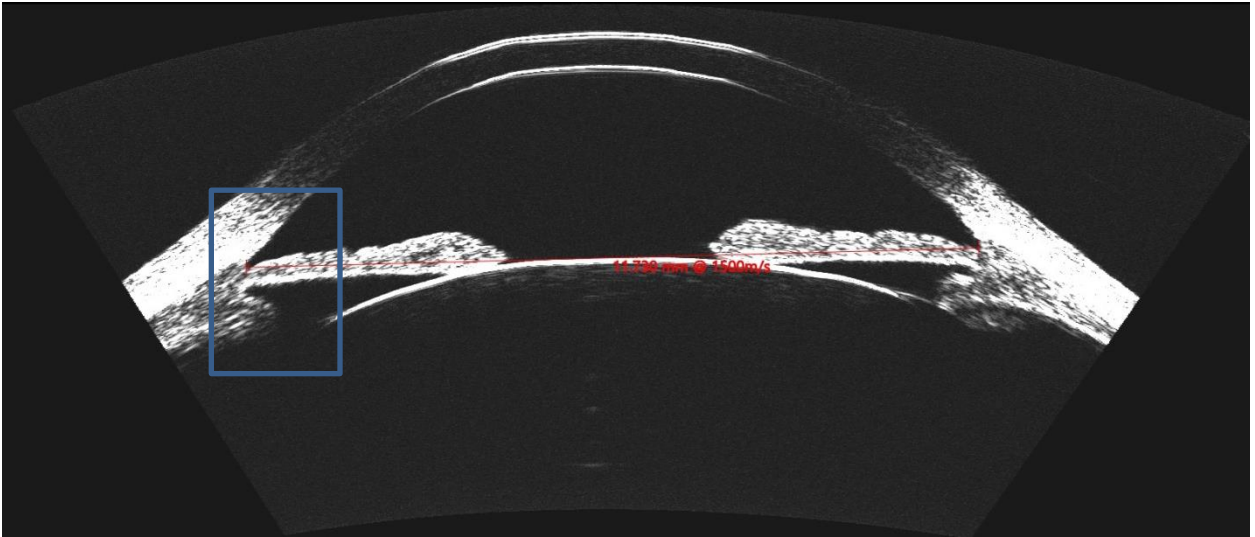
3. Ciliary Body Inner Diameter (CBID) – The distance between the inner-most points of the ciliary body.
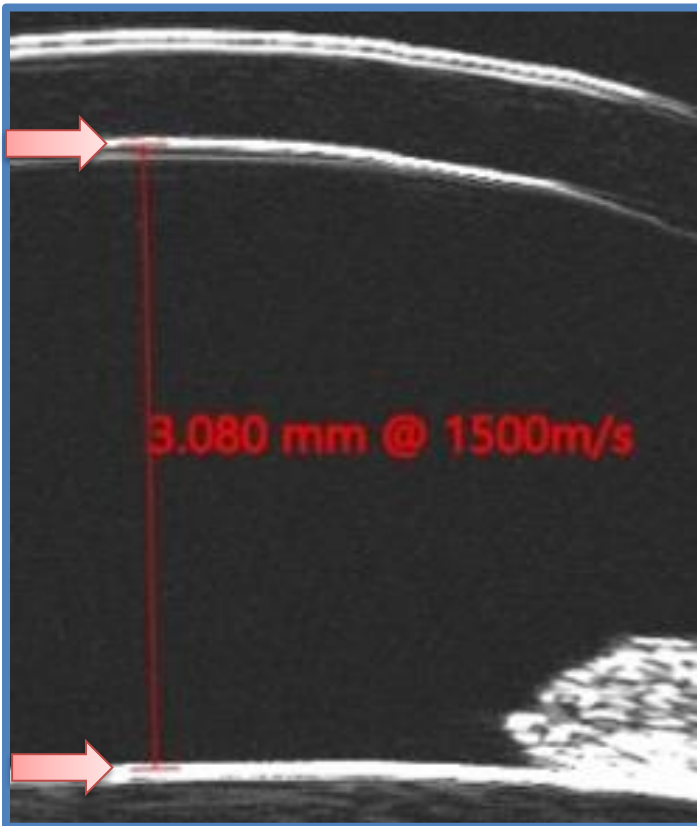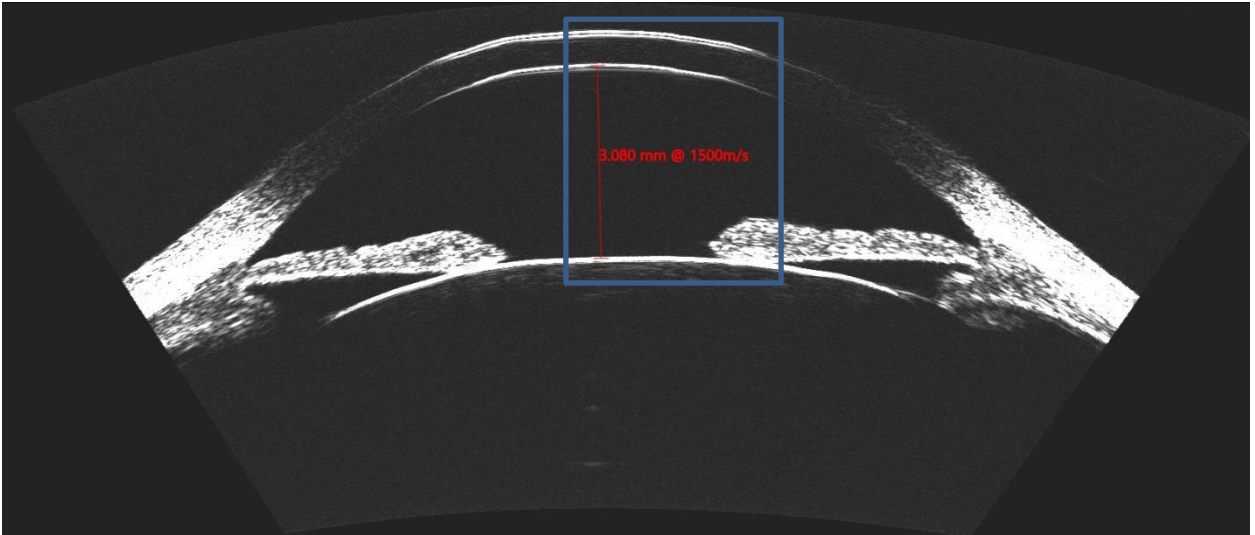

10.502 mm @ 1500m/s
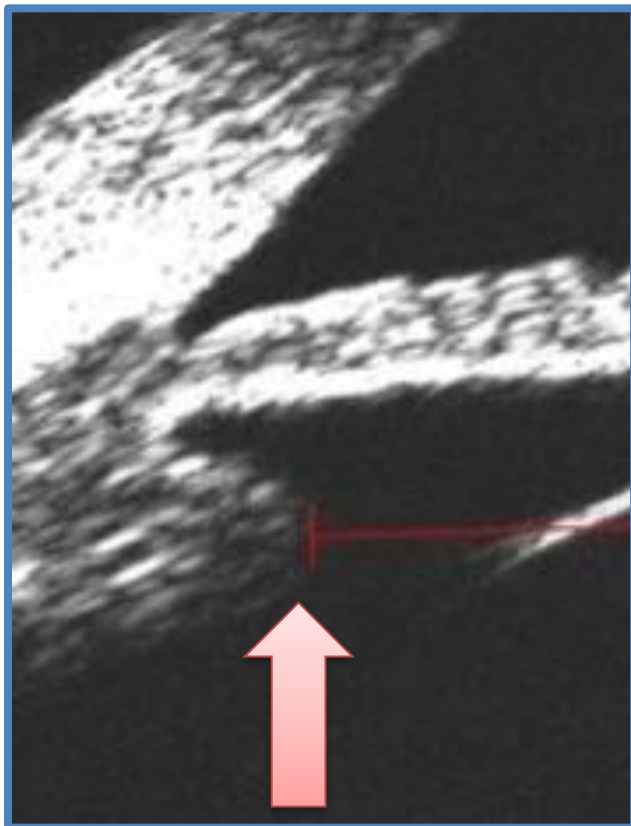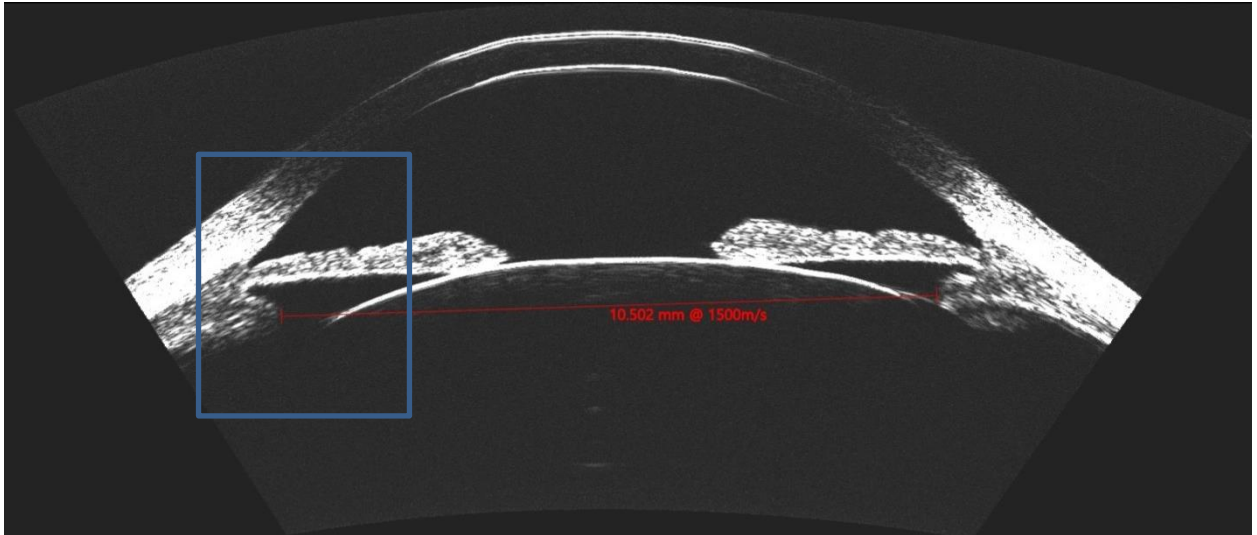
4. Zonular plane lens rise (ZPL) – The distance between the zonular plane and anterior lens capsule.
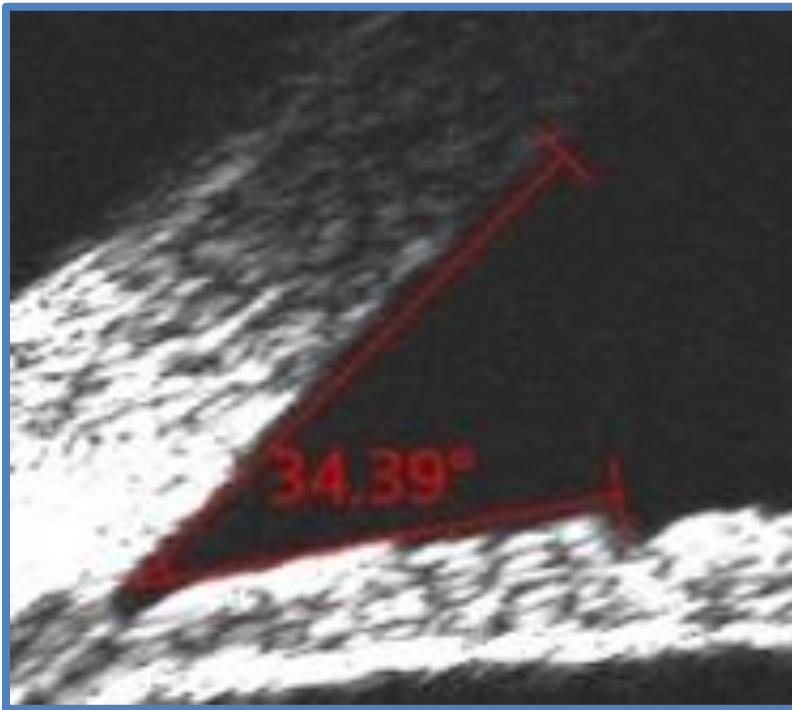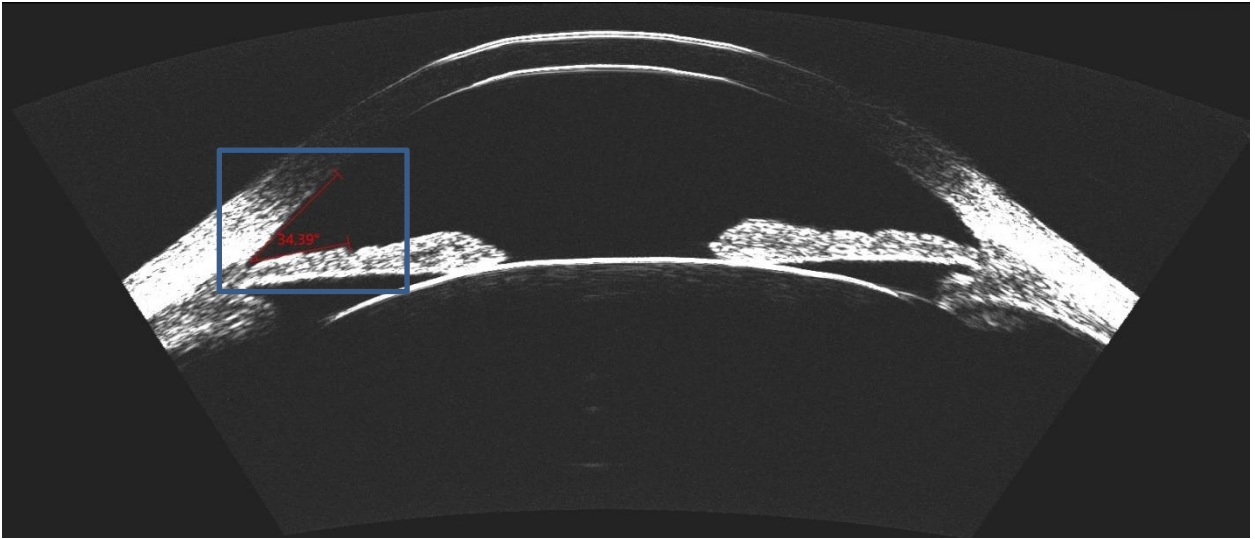
5. Angle-to-angle (ATA) –Taken from the deepest visible part of the angle recess.

6. Anterior chamber depth (ACD)

7. Anterior chamber angle (ACA) – Safety parameter taken from the narrowest measured angle.

Post-op ICL Scan Analysis

The horizontal (0°) meridian should be used for 'vault' analysis. If the horizontal meridian is deemed not usable, the next closest meridian should be used. Each of the following measurements is then recorded.

1. Lens vault – measured from the anterior surface of the crystalline lens to posterior surface of the ICL. We also take measurements of the mid-peripheral vault to ensure there is adequate separation over the whole of the lens.
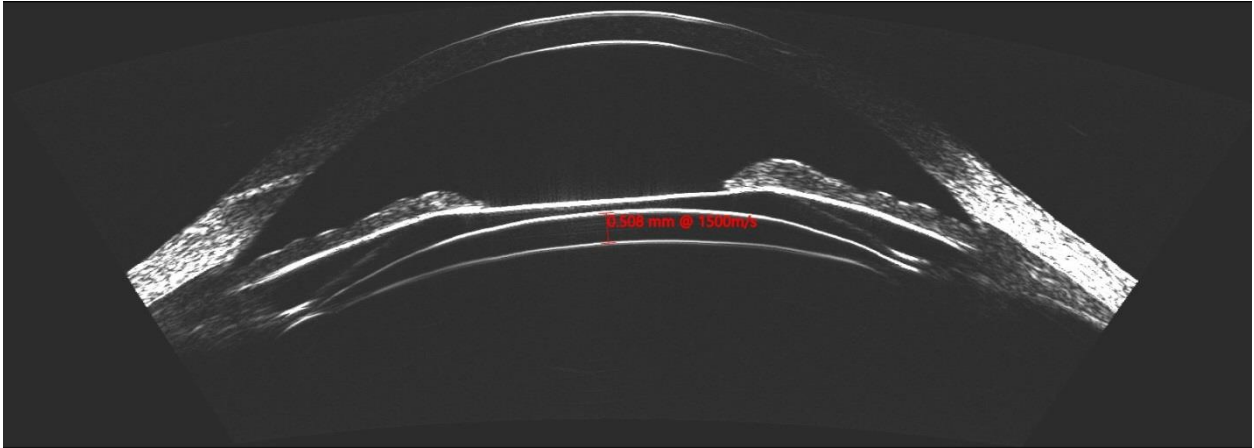
2. Anterior chamber angle – Taken as a safety measure/outcome.
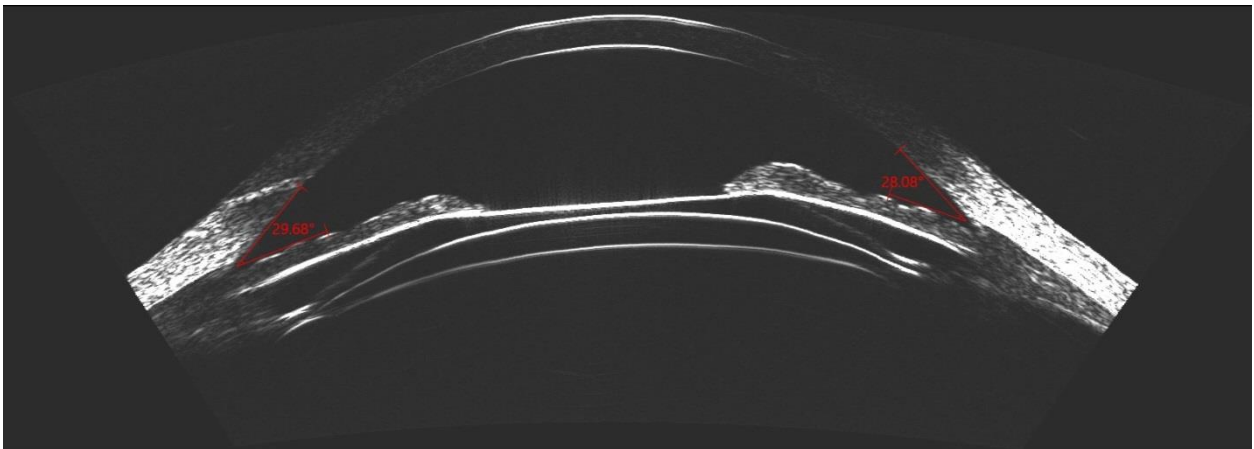
For additional footplate imaging: The angle of footplate insertion is determined based on the STAAR OCOS rotation diagram and a second set of 7 scans over a 10° range can be performed or the advanced footplate identification scan protocol can be followed (see below).

Advanced footplate identification scan protocol

*used to identify footplate insertion points into the ciliary body.

- Adjust the reference horizontal plane by matching it on the Insight software to the surgical implantation angle
    - This information is on the Implantation Orientation Diagram
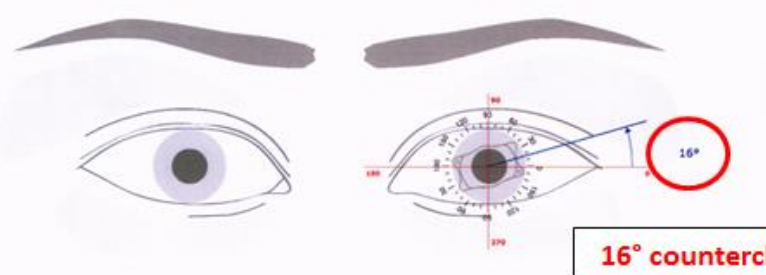
- From this position the footplates should be +/- 15°.
- Next perform a scan set in desired meridian. You can adjust the step in the meridians scanned (i.e. if the lens is rotated 16 ° then set the horizontal meridian to be 33° and perform a scan set of 7 scans about the horizontal (+/ 10°).

If a higher quality imaging of the footplate is necessary, you can then switch the scan type to perform a compound scan.

The compound scan should be focused on the lens just as before. It will take longer than the previous scans so coach the patient through it.
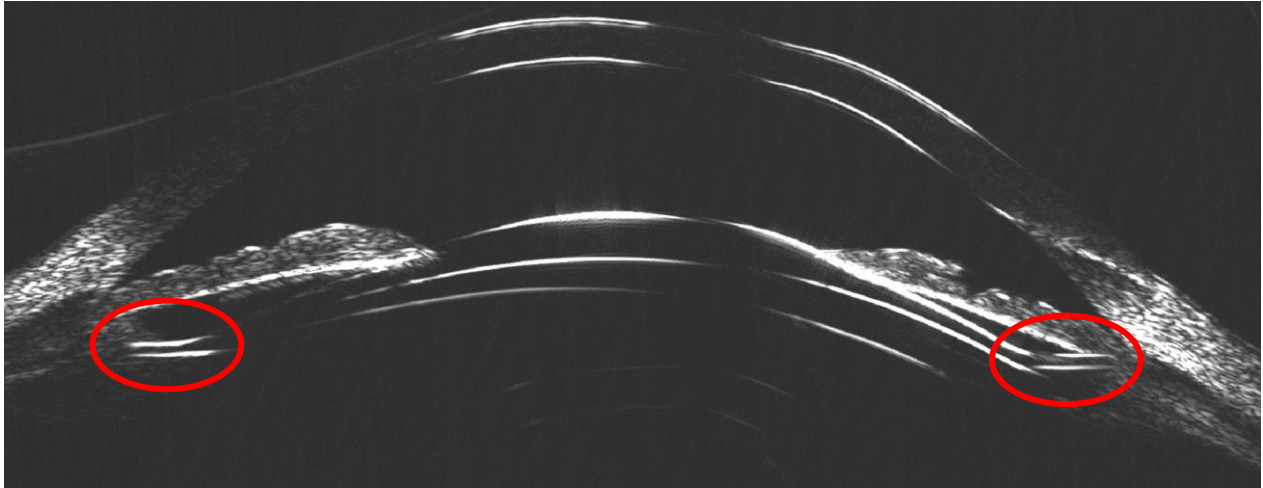
- If you do not see the footplates, then adjust the scan meridian in 2 degree increments either side of the planned angle until the footplates are located.
- Do not take the patient off the machine until the footplates are located and scanned, otherwise you have to start again from the beginning.

Once the footplates are identified via a compound scan it may be necessary enhance the image quality by removing unnecessary sweeps within the compound scan set.