DRI OCT Triton

Swept Source Optical Coherence Tomography

SS OCT + Multimodal Fundus Imaging

Optimise Your Clinical Workflow

TOPCON Healthcare

TRITON EVOLVED

Enhance Your Daily Diagnosis

TRITON

OVERVIEW

High Density Swept Source OCT

Deep Penetration, Including Through Media Opacities such as Cataracts and Haemorrhages[1]

Multimodal Imaging, SS-OCT, Colour, Red-Free, IR, FA[2], FAF[2], OCT-A[3] and Anterior[3]

Optimise Your Practice Workflow by Simplifying and Speeding Up Data Capture, Analysis and Follow-Up[4]

NEW

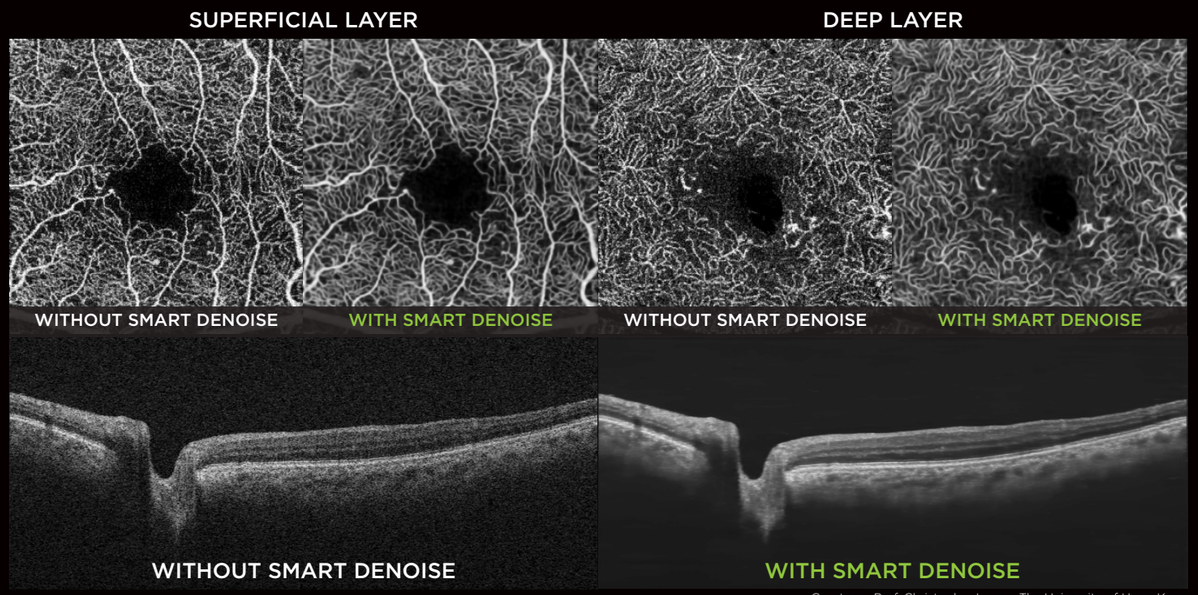
Wide-Field[3] OCT/OCT-A Up to 21mm Wide

NEW

Higher Signal-to-Noise Ratio OCT/OCT-A Images with Smart Denoise

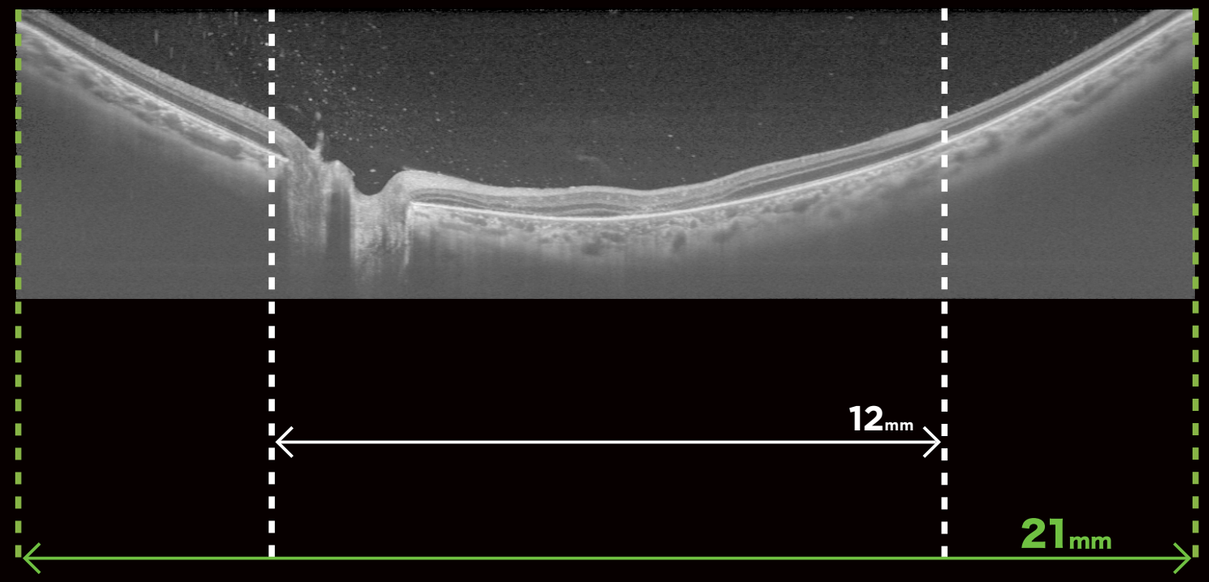
[1] Hina Khan, Aamir Asrar, Bisma Ikram, Maha Asrar, Comparison of Image Quality between Swept Source and Spectral Domain OCT in Media Opacification, Pak J Ophthalmol 2016, Vol. 32, No. 3
[2] Triton plus only
[3] Optional
[4] Rachel Hiscox, Clinical applications of optical coherence tomography: what should I know?, Optometry in Practice 2016, Col.17, Issue 2, 59-70

SMART DENOISE FUNCTION



Courtesy : Prof. Christopher Leung, The University of Hong Kong
Image is one of 256 B-scans captured as part of by Triton's 12 x 9mm 3D wide scan.

WIDER OCT IMAGING



Courtesy: Dr. Yoshinori Mitamura, MD, PhD, Tokushima University, Japan

SMART DENOISE

Smart Denoise is an image processing algorithm which reduces artifacts and increases contrast. High quality OCT and OCT-A images with reduced noise signal are generated from every B-scan within the dense data cubes, through the use of Topcon's unique AI algorithm.

Image Processing by Topcon's Unique AI Algorithm

B-scan Smart Denoise for Dense 3D Scans

OCT-A Denoising for Superfical and Deep Slabs

Easy to Capture High Quality Images

WIDE-FIELD OCT

The optional wide-field attachment lens enables the capture of scans up to 21mm in length. Gather more clinical insights with wide-field OCT and OCTA imaging is valuable in a wide variety of conditions.

Up to 21mm Wide

Boosts Multimodal Imaging Capability

Quick and Easy to Attach the Lens

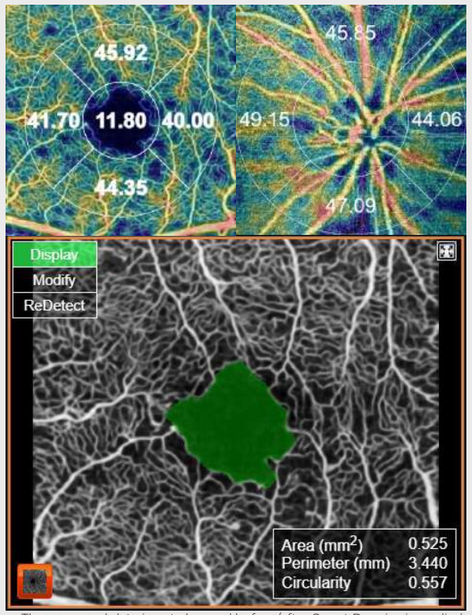
Wide-Field OCTA 21×21mm Wide

OCT Angiography with Swept Source OCT

TOPCON's SS OCT Angio™ combines OCT Angiography with Swept Source OCT technology and a long 1050nm wavelength. OCTARA™, a proprietary image processing algorithm, provides highly sensitive angiographic detection[5], allowing for visualisation of vascular structures.

OCTA Metrics

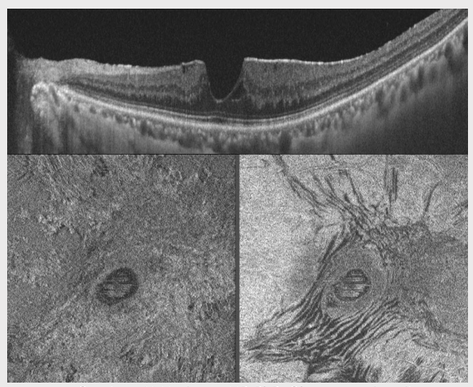
Triton's SS OCT Angio displays OCTA density, the ratio between high and low signal areas, The information is displayed as a colour map with the ability to display values, for rapid comprehension.



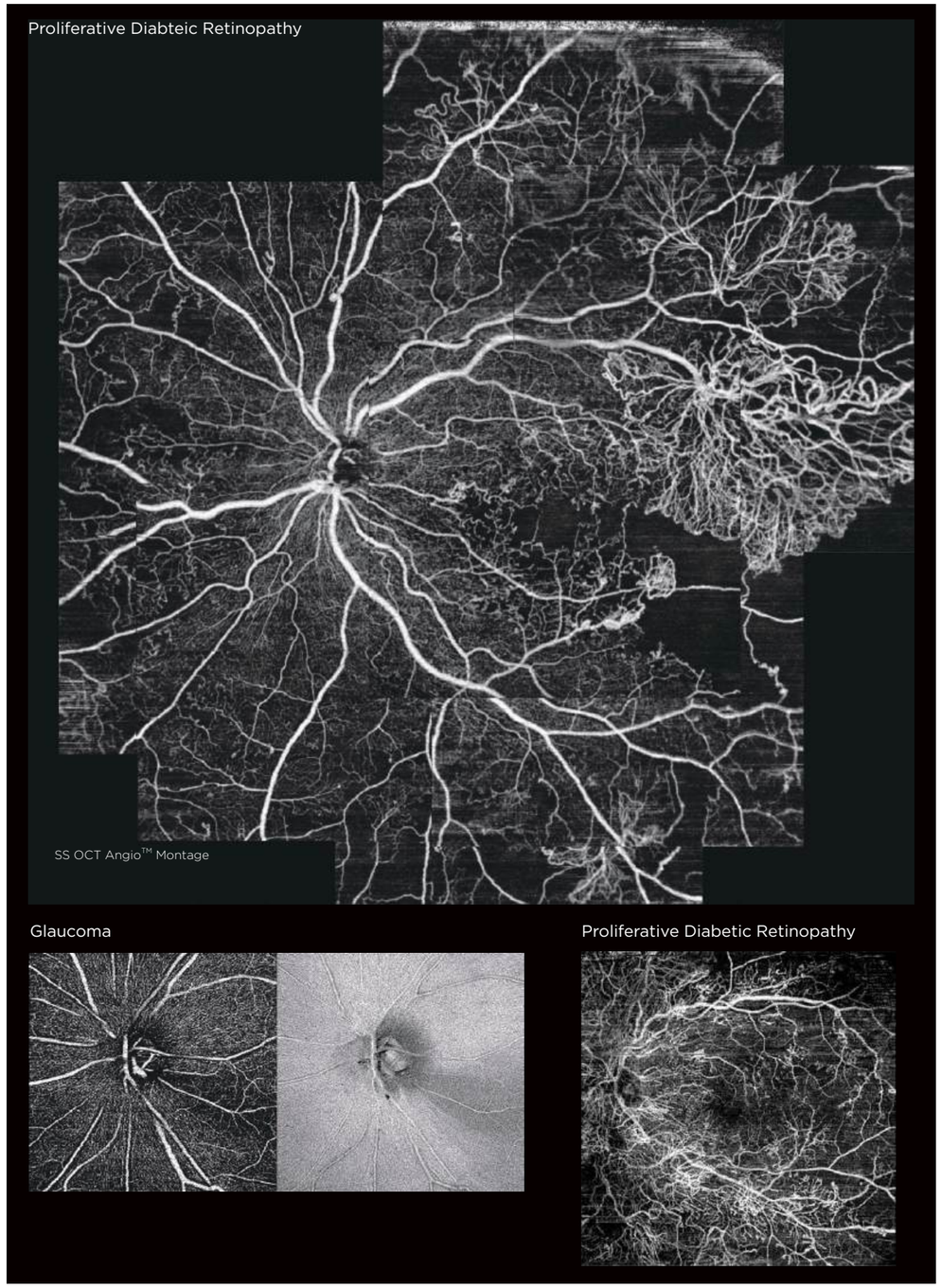
The measured data is not changed before/after Smart Denoise is applied.

En Face OCT Imaging

En face imaging allows for independent dissection and examination of key layers, such as the vitreoretinal interface (ILM boundary), retinal pigment epithelium and choroidal layers.



Courtesy: Y. Morizane, MD,PhD, Okayama University, Japan



Courtesy: Akihiro Ishibazawa, MD, PhD. Asahikawa Medical University Graduate School of Medical Sciences, Hokkaido, Japan

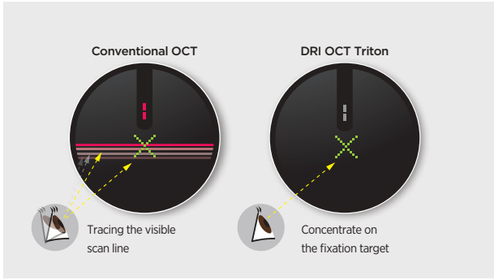
[5] Magdy Moussa, Mahmoud Leila, Hagar Khalid. Imaging choroidal neovascular membrane using en face swept-source optical coherence tomography angiography. Clinical Ophthalmology 2017:11 1859–1869

Swept Source OCT Technology; Scanning Speed of 100,000 A-scans/sec

A fast scanning speed of 100,000 A-scans/sec enables capture of a dense array of clear B-scans[6] by acquiring more A-scans within a given image acquisition time. This helps to reduce artifacts from involuntary eye movements such as saccades and blinks.

Invisible Scan Lines

The invisible 1,050nm wavelength light helps patients concentrate on the fixation target during the scan, reducing involuntary eye movement. It supports more efficient workflow in a practice by reducing the need to rescan.



Multimodal Imaging

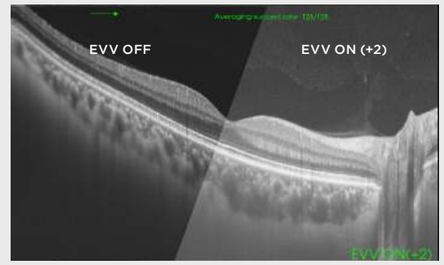
The DRI OCT Triton offers a true colour[7], non-mydriatic fundus image. Fluorescein Angiography (FA) and Fundus Autofluorescence (FAF) are available to enhance the diagnostic capability of Triton plus*. The all-in-one device supports efficient workflow in practice. DRI OCT Triton can acquire the OCT and fundus image in a single capture. PinPoint™ registration identifies the location of the B-scan on the fundus image. Comparison between the B-scan and fundus image can support efficient clinical diagnosis.

Colour Image Sensor : 5MP FA Image Sensor : 4MP FAF Image Sensor : 4MP

[6] Shoji Kishi. Impact of swept source optical coherence tomography on ophthalmology. Taiwan Journal of Ophthalmology 6 (2016) 58-68
[7] Colour fundus image with white light, with 24-bit colour.
*Product name is DRI OCT Triton (plus)

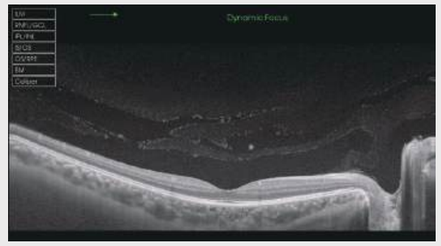
EVV (Enhanced Vitreous Visualization™)

EVV helps clinicians assess vitreous and vitreoretinal interface abnormalities[8]. Contrast can be quickly adjusted to the needs of the physician, depending on the area of greatest interest.



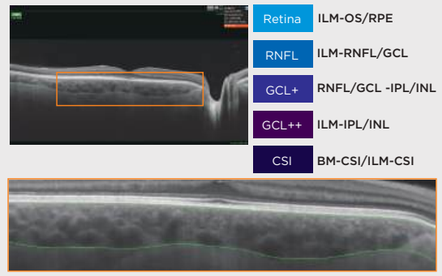
Triton's Dynamic Focus™

Triton's Dynamic Focus™ allows for acquisition of images with near uniform focus and image quality throughout the entire depth of the image, for example vitreous, retina and choroid.



5 layer thickness map function/ Choroidal Thickness Map

Retinal tissue layers are automatically segmented by the Topcon Advanced Boundary Software (TABS™), enabling quantification of retinal thickness and sub layers[9,10]. Triton provides clear visualisation of the choroid, and generates choroidal thickness maps to visualize choroidal structure and response to treatments.



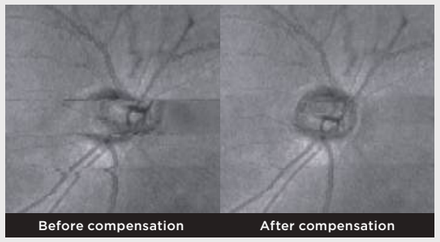
Fundus Guided Acquisition (FGA)

OCT scan location can be easily set by selecting the area of interest on the fundus image. With FGA, the operator can choose to capture or import a fundus image, select the scan location and automatically acquire a B-scan or array of B-scans at that location.

[8] Fabio Lavinsky, Daniel Lavinsky. Novel perspectives on swept-source optical coherence tomography. Int J Retin Vitr (2016) 2:25
[9] Zhichao Wu, Denis S. D. Weng, Rashmi Rajshekhar, Abinaya Thenappan, Robert Ritch, Donald C. Hood. Evaluation of a Qualitative Approach for Detecting Glaucomatous Progression Using Wide-Field Optical Coherence Tomography Scans. Trans Vis Sci Tech. 2018;7(3):5.
[10] Beatriz Abadia, Ines Suñen, Pilar Calvo, Francisco Bartol, Guayente Verdes, Antonio Ferreras. Choroidal thickness measured using swept-source optical coherence tomography is reduced in patients with type 2 diabetes. PLoS ONE 13(2): e0191977.

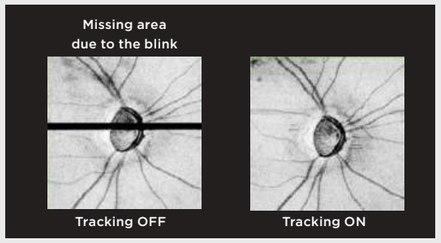
Motion Correction Compensation/ Rescanning Function

Motion Correction
Corrects the Z direction movement
Compensation
Tracks the eye and then compensates for the X direction movement.
Rescanning Function
The rescanning function is available to minimise data loss due to blinking and Y direction eye movement during 3D OCT and 3D OCT Angiography scans.



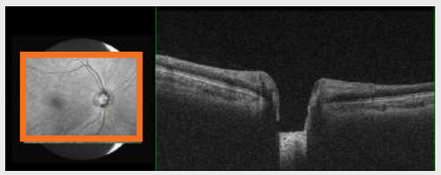
SMARTTrack™

SMARTTrack™ system enables to capture image of designated location by automated tracking of the eye. For the 3D OCT scan and OCT Angiography scan, re-scan is performed when there is a data loss due to blink.



Projection Image

The projection image provides an easy means of confirming scan locations when the OCT image capture is not accompanied by a colour fundus image.

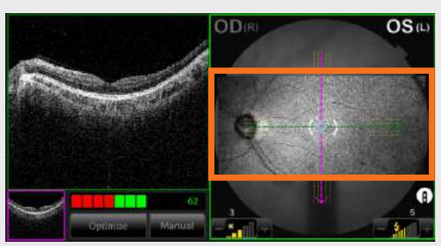


Alignment Navigation

Triton's alignment navigation guides simplify operation of the device and direct the operator to achieve optimal device positioning, reducing acquisition errors and supporting rapid capture.

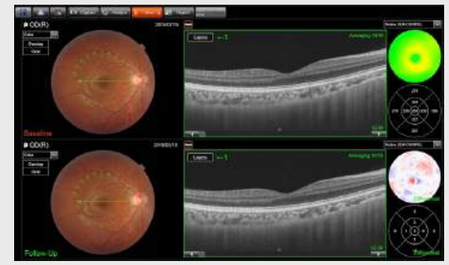
Live Fundus View

The fast scanning speed allows the Triton to create a live En Face fundus image, an ideal tool for precisely visualizing the scan position. This enables the operator to be sure they are capturing the correct area, even in patients with small pupils.



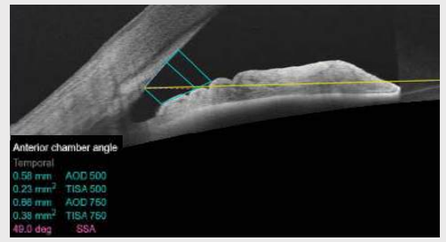
Follow-Up Function

This function allows you to retrieve and re-analyze the same location with follow-up scans, for seamless comparison of past and current scan data. Operators only need to select past data and Triton automatically captures the same area.



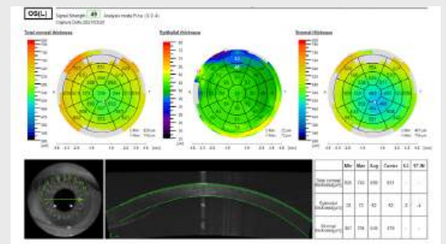
Anterior Segment Imaging

Triton's optional anterior segment imaging capabilities allow for visualisation of the cornea, anterior chamber angle, iris and anterior sclera. The anterior segment lens attachment is combined with quantitative analysis. The new anterior segment feature reaffirms Triton's value in comprehensive eye care settings.



Anterior Chamber Angle Analysis

OCT image B-scan length in 16mm



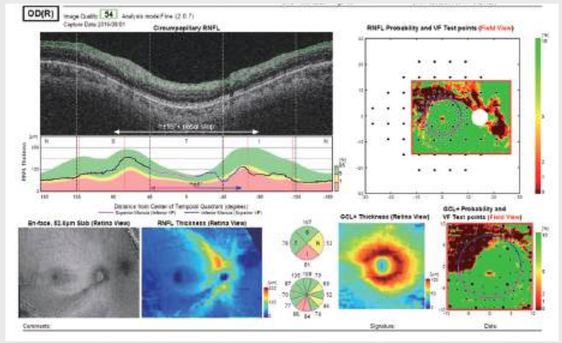
Corneal Thickness Map Report

INFORMATIVE REPORTS

Seamlessly analyse data acquired with SS OCT using in the context of Triton's reference database. The DRI OCT Triton offers a range of comprehensive reports which consolidate essential diagnostic information into a single page and use colour-coding for easy visual identification of abnormalities against the reference database. These features support diagnosis and treatment planning for conditions including macular diseases and glaucoma.

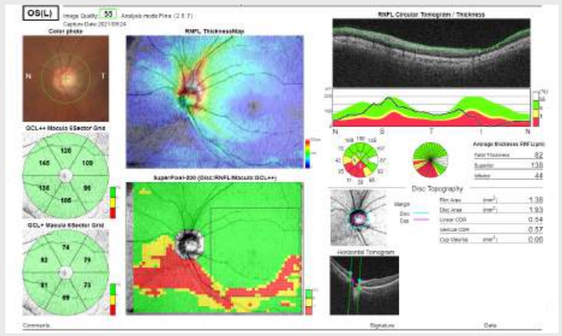
Hood Report

The Hood Report provides Retinal Thickness/ RNFL/ GCL and Circumpapillary Metrics in one scan. This report streamlines the decision-making process through the correlation of structural probability maps (GCC/RNFL) with function (overlay of visual field test locations)[11].



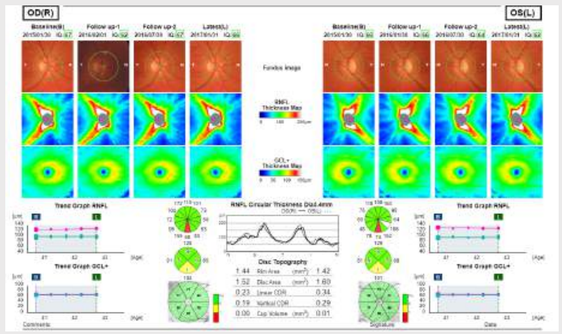
3D Wide Glaucoma Report

The 12x9mm wide-field scan covers the optic nerve and macula and can be captured in one acquisiton to provide a comprehensive assessment of the posterior pole with reference database comparison.



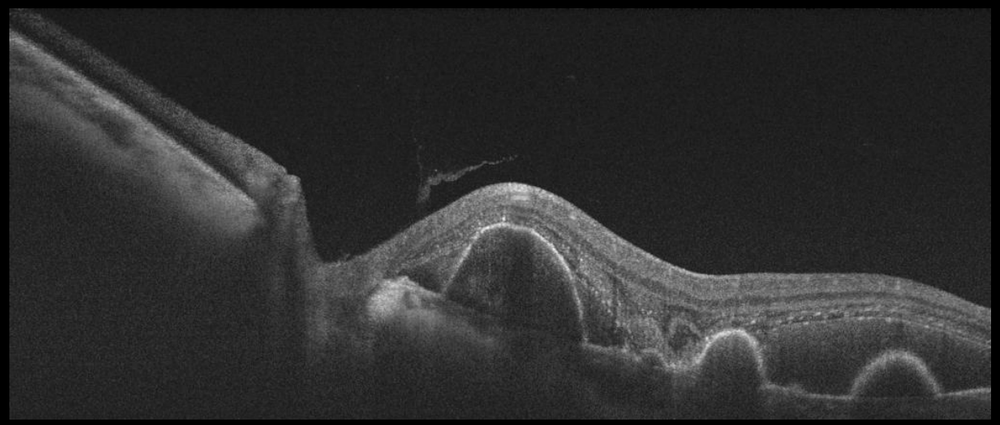
Trend Analysis Report

These reports show the change in thickness measurements over time. The layer displayed (RNFL/GCL+/ GCL++) can be selected as required depending on the area scanned. Poor scans can be excluded and new baselines added when management changes.



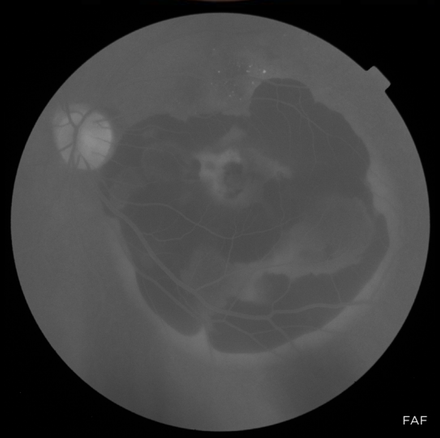
[11] Zhichao Wu, Denis S. D. Weng, Rashmi Rajshekhar, Abinaya Thenappan, Robert Ritch, Donald C. Hood. Evaluation of a Qualitative Approach for Detecting Glaucomatous Progression Using Wide-Field Optical Coherence Tomography Scans. Trans Vis Sci Tech. 2018;7(3):5.

Polypoidal Choroidal Vasculopathy

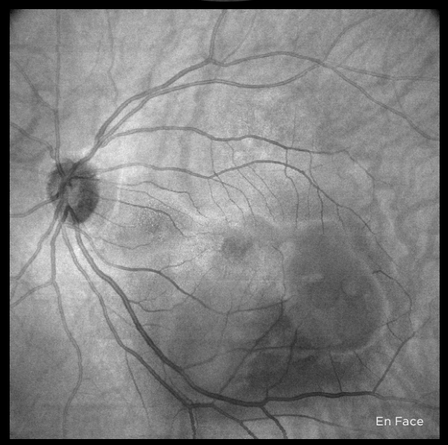


Colour

FA



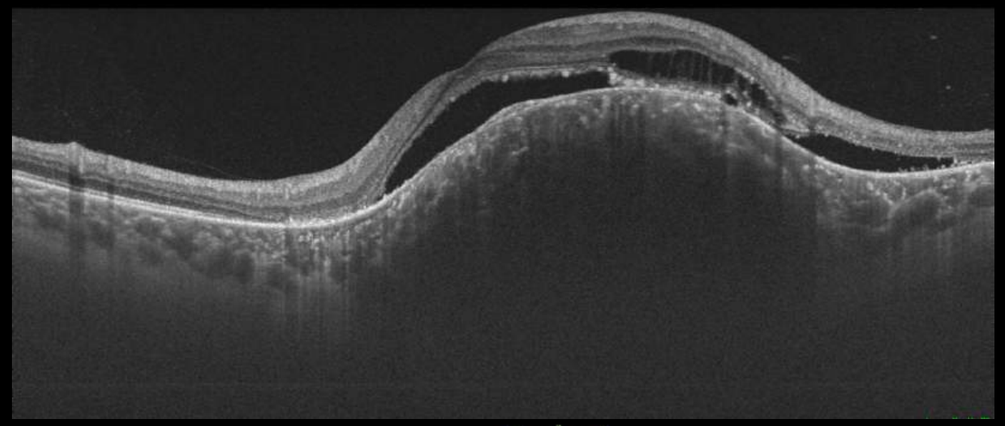
FAF



En Face

Courtesy: XZ,Zhang,Zhongshan Ophthalmic Centre, Sun Yat-Sen University

Choroidal Hemangioma

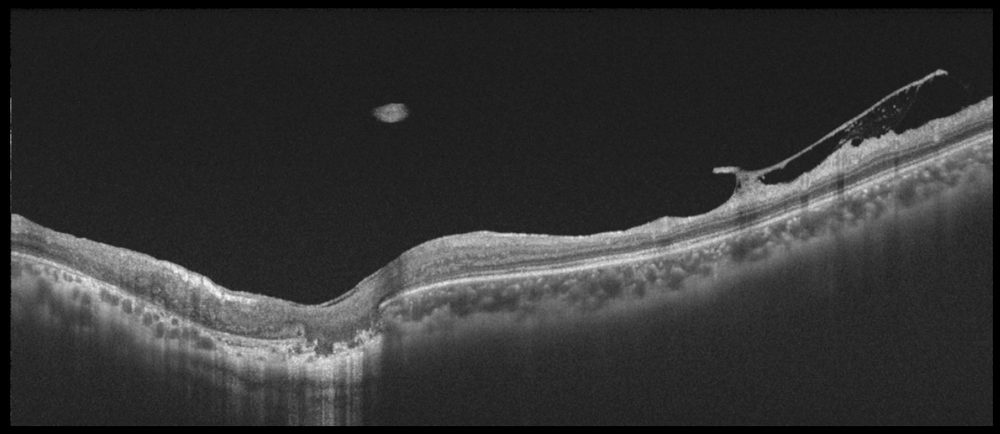


Colour

Red Free

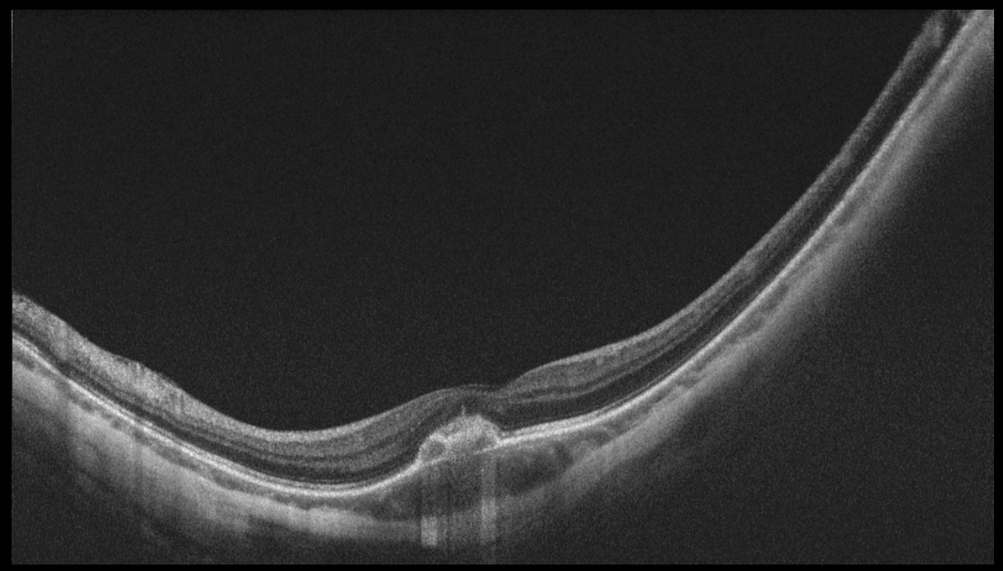
Courtesy: Prof. Min Wang, Eye, Ear, Nose and Throat Hospital, Fudan University

Epiretinal Membrane



Courtesy: Prof. Wen, Zhongshan Ophthalmic Centre, Sun Yat-Sen University

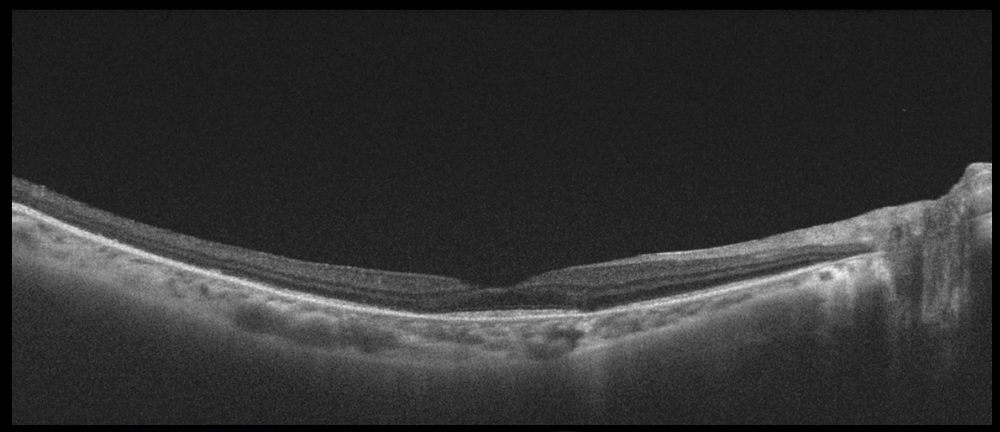
Punctate Inner Choroidopathy



Colour FAF

Courtesy: Prof. Wen, Zhongshan Ophthalmic Centre, Sun Yat-Sen University

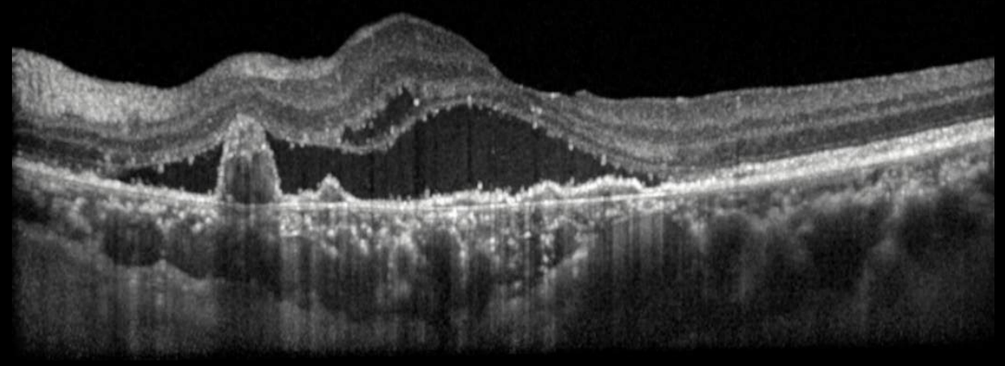
Uveitis



Colour FAF

Courtesy: Prof. Min Wang, Eye, Ear, Nose and Throat Hospital, Fudan University

AMD



Courtesy: Dr. Kelvin Teo, MBBS, PhD, Associate Professor, Duke NUS Ophthalmology ACP Senior Consultant, Medical Retina Department, Singapore National Eye Centre

SPECIFICATIONS

Observation & Photography of Fundus Image	
Photography type	Colour, FA(Note1), FAF(Note1), Red-free(Note2), IR
Picture angle	45°±5% Equivalent to 30° (Digital zoom)
Photographable diameter of pupil	Normal: ϕ4.0mm Small pupil diameter: ϕ3.3mm
Fundus image resolution (on fundus) **[Optical resolution]**	Center: 60 lines/mm Middle(r/2): 40 lines/mm Periphery(r): 25 lines/mm
Observation & Photography of Fundus Tomogram	
Scan range (on fundus)	Horizontal 3 to 12mm±5%, Vertical 3 to 12mm±5%
Scan pattern	3D scan, Linear scan (Line-scan/Cross-scan/Radial-scan)
Scan speed	100,000 A-Scans per second
Lateral resolution	20μm
In-depth resolution	Optical resolution: 8μm Digital resolution: 2.6μm±3% (When taking two or more pictures)
Photographable diameter of pupil	ϕ2.5mm
Observation & Photography of Fundus Image / Fundus Tomogram	
Operating distance	34.8mm±0.1mm
Fixation target	Internal fixation target Dot-matrix type organic ELD display The display position can be changed and adjusted. The displaying method can be changed. Peripheral fixation target This is displayed according to the internal fixation target displayed position. External fixation target
Measurable range of dioptric power for the patient's eye	Without the diopter compensation lens -13D to +12D When the concave compensation lens is used -12D to -33D When the convex compensation lens is used +11D to +40D
Observation & photography of Wide field Fundus Tomogram(Note3)	
Operating distance	10.5mm±0.5mm
Scan range (on fundus)	Horizontal 21mm±10%, Vertical 21mm±10%
Scan pattern	3D scan, Linear scan (Line-scan/Cross-scan/Radial-scan)
Scan speed	100,000 A-Scans per second
Lateral resolution	30μm
In-depth resolution	Optical resolution: 8μm
Fixation target	Internal fixation target Dot-matrix type organic ELD display The display position can be changed and adjusted. The displaying method can be changed. Peripheral fixation target This is displayed according to the internal fixation target displayed position. External fixation target
Measurable range of dioptric power for the patient's eye	Without the diopter compensation lens -7D to +40D When the concave compensation lens is used -33D to -5D
Observation & Photography of Anterior Segment Image(Note4)	
Photography type	IR
Observation & Photography of Anterior Segment Tomogram(Note4)	
Scan range (on cornea)	Horizontal 3 to 16mm±5%, Vertical 3 to 16mm±5%
Scan pattern	3D scan / Line scan (Line-scan/Radial-scan)
Scan speed	100,000 A-scans per second
Observation & Photography of Anterior Segment Image/Anterior Segment Tomogram(Note4)	
Operating distance	17±0.3mm
Fixation target	Internal fixation target LED target External fixation target
Electric Rating	
Source voltage	AC 100-240V
Power input	250VA
Frequency	50Hz-60Hz
Dimensions & Weight	
Dimensions	320-359 mm(W) X 523-554 mm(D) X 560-590 mm(H)
Weight	21.8kg (DRI OCT Triton) 23.8kg (DRI OCT Triton (plus))

Note1: FA photography and FAF photography can be performed only with the DRI OCT Triton (plus).
Note2: Digital red free image processing of colour images to display them as pseudo Red-free images.
Note3: Observation & Photography of Wide field Fundus Tomogram are available only when using Wide field OCT attachment lens WA-1.
Note4: Observation & Photography of Anterior Segment Image and Tomogram are available only when using ANTERIOR SEGMENT ATTACHMENT KIT AA-1.

	Colour	FA	FAF	En Face	Red-Free	Anterior*	OCT-A*	WF OCT*
Triton	○	-	-	○	○	○	○	○
Triton plus	○	○	○	○	○	○	○	○

*Optional

IMPORTANT In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.
Not all products, services, or offers are available in all markets. Contact your local distributor for country-specific information and availability.

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