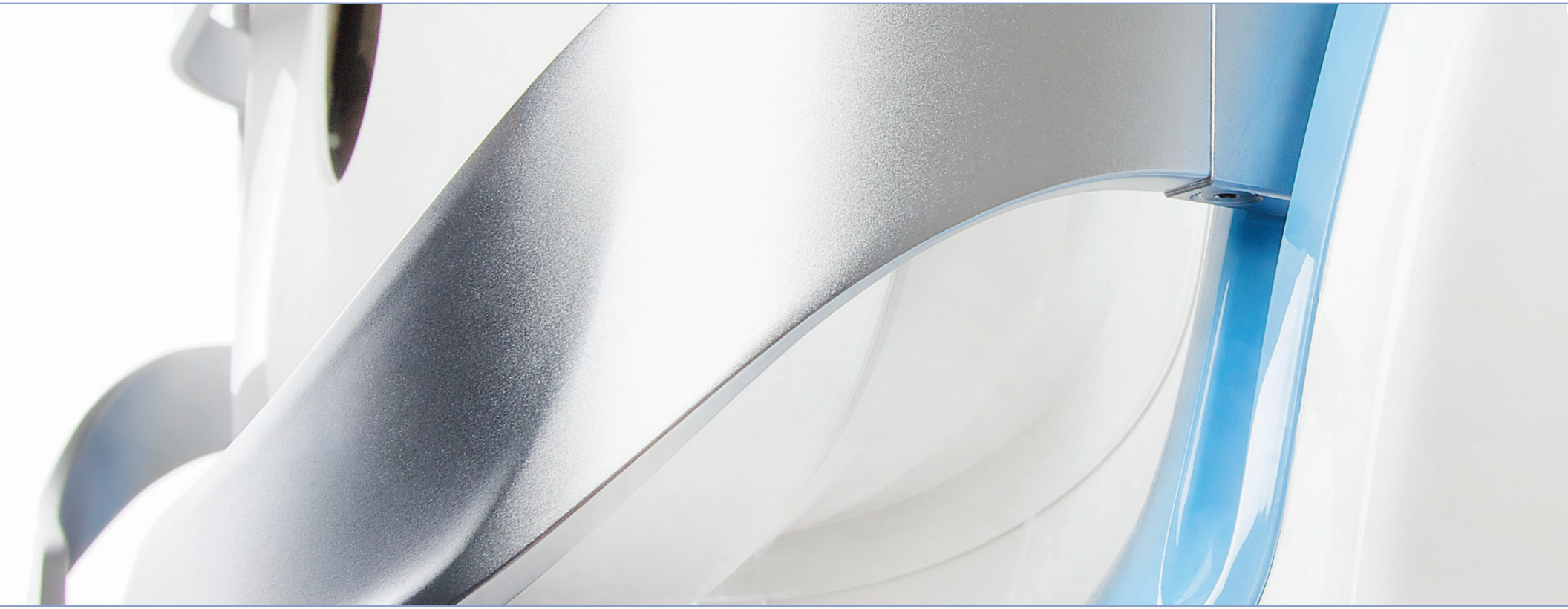
MonacoPRO



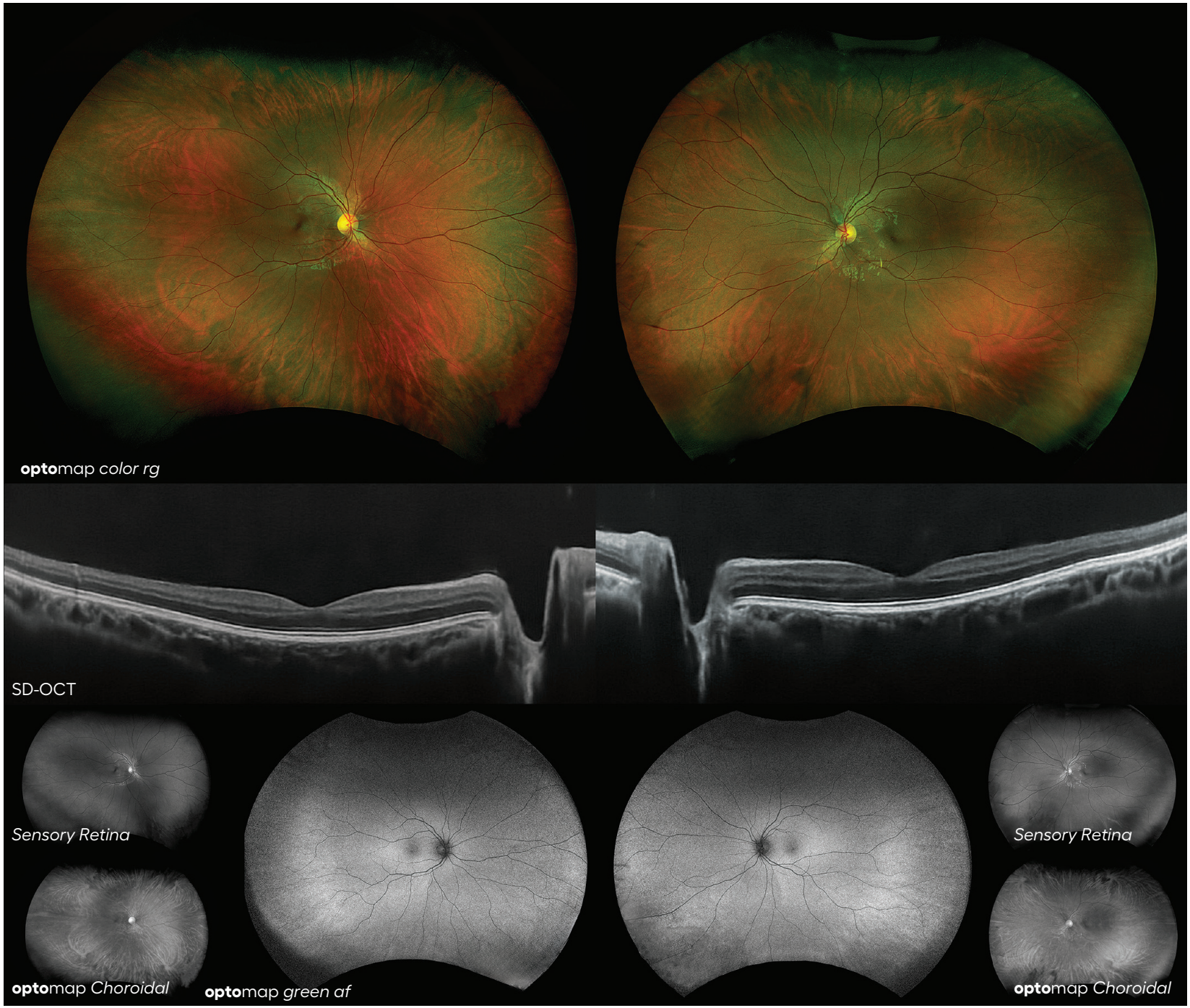
Nikon

optos®

Optos Ultra-widefield Retinal Imaging with **opto**map-guided SD-OCT

MonacoPRO

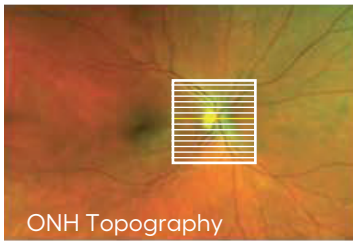
The only device delivering **opto**map® *color rg*, *Sensory Retina*, *Choroidal*, *green af*, and high resolution SD-OCT— with 5-modality bilateral capture in just 90 seconds.

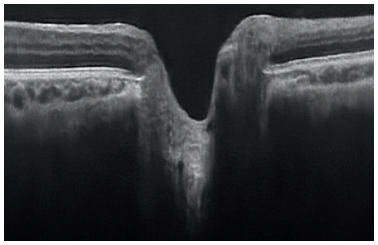


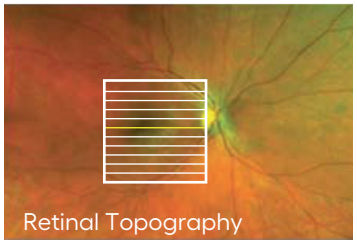
Fast, Comprehensive Imaging

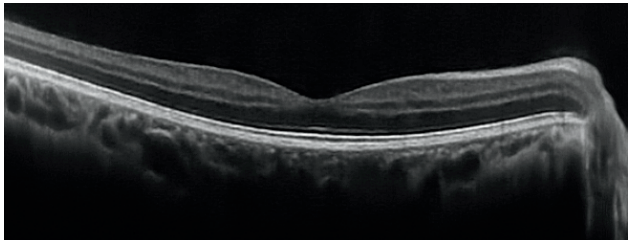
MonacoPro allows visualization of multiple image modalities at the same time, enabling a practitioner to detect pathology with a single click.

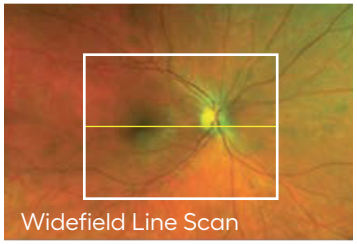
OCT SCAN TYPES

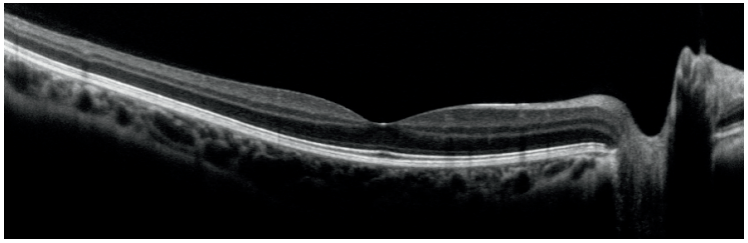


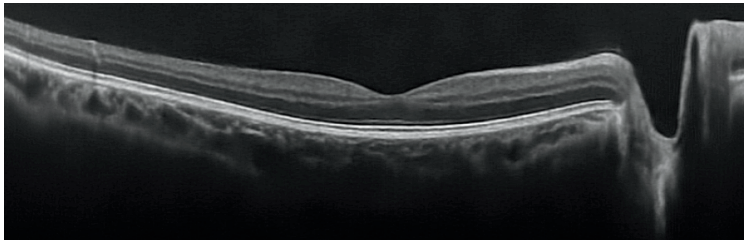


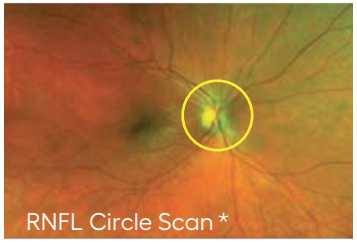


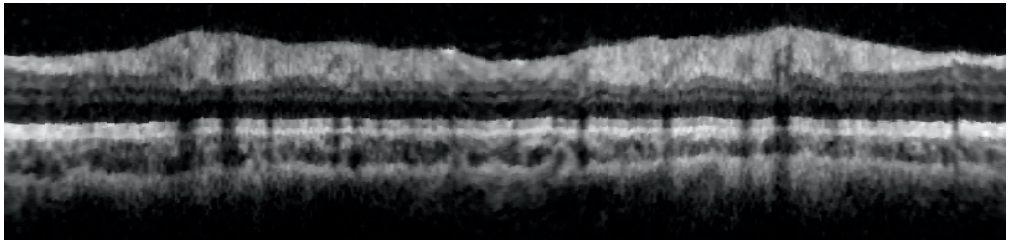












*The segmented peripapillary RNFL circle scan is automatically extracted from the ONH Topography scan.

Only *MonacoPro* provides ultra-widefield SLO and SD-OCT in a single, seamless platform.

- **Unmatched Diagnostic Capability**

  Combined 200° single-shot **opto**map imaging with spectral-domain OCT has been reported to support the detection of 29.4% more macular pathology compared to fundus imaging alone.[1]

- **Clinically Validated Performance**

  Supported by over 3,000 clinical studies across 300+ diseases, demonstrating enhanced diagnostic accuracy and improved patient outcomes.[2]

- **Cutting-Edge OCT Integration**

  Integrates high-resolution *MonacoPro* SD-OCT imaging into every exam, elevating the standard of care.

- **Optimized Workflow Efficiency**

  Captures up to five imaging modalities for both eyes in just 90 seconds—streamlining diagnostics and boosting clinical productivity.

Fast, Comprehensive Imaging and Analysis

The *MonacoPro* analysis tools automatically segment, measure, and display key parameters. Results are shown in relation to the comprehensive Reference Database population.

RETINAL THICKNESS

ILM and RPE are automatically detected and marked. Retinal thickness is measured and displayed in a color map, and numeric values are provided in an ETDRS grid overlay.

GANGLION CELL COMPLEX THICKNESS

GCC is automatically segmented and measured from the ILM to the IPL. Thickness measurements are displayed in a color map and grid overlay.

ONH RNFL THICKNESS

Retina nerve fibre layer (RNFL) is automatically segmented from the ONH topography cube scan and is displayed in a color map.

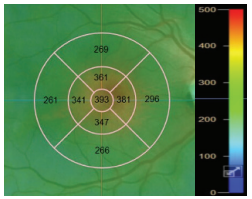
ONH CUP & DISC ANALYSIS

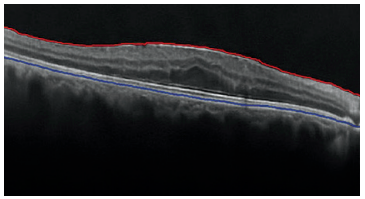
Bruch's Membrane Opening (BMO) and ILM are automatically detected and used to calculate optic nerve head parameters. Disk and Cup outlines and calculated ONH parameters are displayed in table format.

RNFL THICKNESS

Peripapillary RNFL is automatically segmented from the ONH topography scan data. Thickness measurements are displayed graphically and in TSNIT charts.

Thickness map and legend



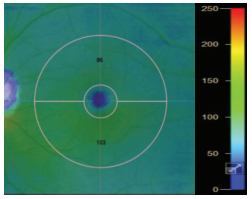


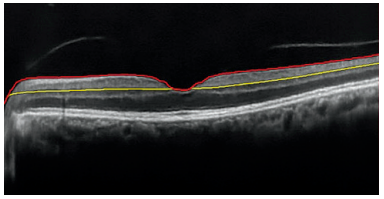
Parameter table with RDB comparison

	Avg. thick., µ
Center	387
Center Circle	393
Superior Inner	361
Temporal Inner	341
Inferior Inner	347
Nasal Inner	381
Superior Outer	269
Temporal Outer	261
Inferior Outer	266
Nasal Outer	296
Totals	295

RDB Legend

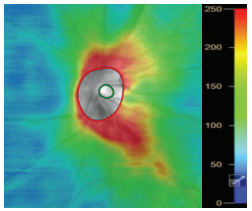
0-1%	value
1-5%	value
1-95%	value
95-98%	value
99-100%	value

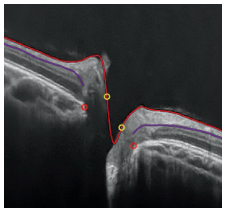


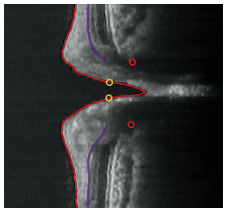


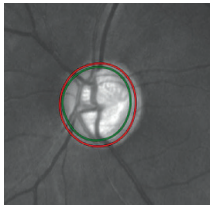
	Avg. thick., µ	Volume, µL
Center	0	
Superior Hemifield	86	1.14
Inferior Hemifield	103	1.37
Totals	94	2.51

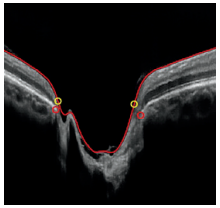
0-1%	value
1-5%	value
1-95%	value
95-98%	value
99-100%	value











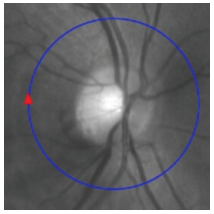
Disk area (mm²)	2.964
Rim area (mm²)	0.629
Cup / Disk horizontal ratio	0.887
Cup / Disk vertical ratio	0.897
Cup / Disk area ratio	0.788

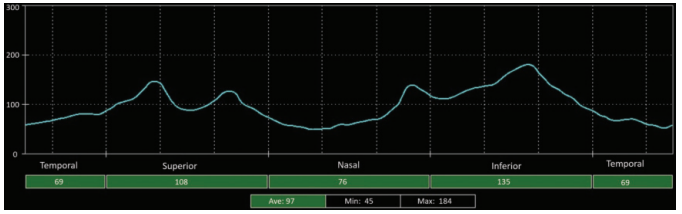
Rim Area

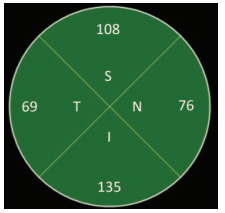
0-1%	value
1-5%	value
1-95%	value
95-98%	value
99-100%	value

CDR

0-1%	value
1-5%	value
1-95%	value
95-98%	value
99-100%	value







0-1%	value
1-5%	value
1-95%	value
95-98%	value
99-100%	value

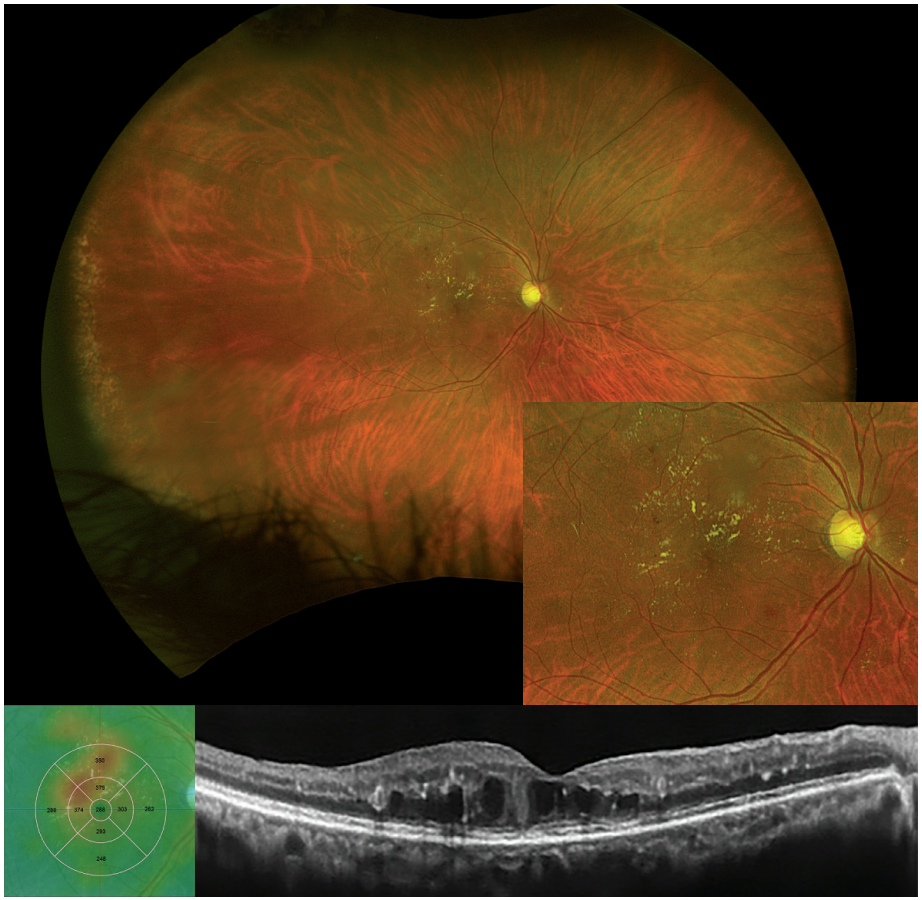
Note: MonacoPro includes a suite of tools to help assess patient imaging by automatically segmenting the retinal layers and comparing them to a reference database (RDB), which follows new best practice, state of the art guidelines for optic nerve head (ONH) size supporting the detection of glaucoma with higher accuracy.[3] RDB information is shown by applying a discrete background color to calculated values and metrics. These values or metrics are shown in 'tables', RNFL quadrant 'wheels' and RNFL thickness 'graph' areas. The retina table above shows an example where Centre Circle and Superior Inner average thickness falls within the 99-100% RDB cutoffs, Nasal Inner within 95-99% and, Temporal Outer and Inferior Outer within 1-5%. Other values annotated as green fall within the most common 5-95% cutoff range.

**Presentation states and RDB composition varies regionally.*

MonacoPro Pathology and Disease Detection

200° single-shot **opto**map imaging combined with *MonacoPro* SD-OCT delivers unparalleled retinal imaging capabilities to assist in disease detection with precision and efficiency.

Diabetic Retinopathy with DME



Patients with diabetic retinopathy can be evaluated for both central and peripheral changes on ultra-widefield **opto**map *color rg*, as peripheral lesions are indicative of high risk for disease progression.[4] *MonacoPro* Retina Topography can be used to evaluate macular edema, as seen in this case where hard exudates and cystic changes are present.

Glaucoma

Patients seen for routine glaucoma exams can be evaluated for peripheral changes on **opto**map *color rg* as seen in this case, including white without pressure (WWOP) and a superotemporal retinal hole, and the optic nerve head can be measured using the cup to disc ratio tool. The *MonacoPro* ONH Topography can be easily evaluated for cupping.

Image Capture Features

- Non-mydriatic, with a minimum 2mm pupil[5]
- cSLO imaging through most cataracts[6]
- 3-in-1 Color Depth Imaging™ provides important clinical data from the retinal surface through the choroid

Software Analysis Features

- Optos*Advance*™ Image Management software streamlines image review and consultations
- A comprehensive Reference Database (RDB) enables results of OCT analysis to be shown in relation to 1%, 5%, 95%, and 99% of the RDB population
- *MonacoPro* is equipped with AreaAssist, a tool designed to improve the efficiency of retinal imaging workflows by enabling users to automatically measure continuous areas of matching color and adjust the sensitivity of the selected area
- Distance (mm) and area (mm^2) measurements provide objective assessment of change over time

Software Compliance Features

- *MonacoPro* includes robust cybersecurity enhancements to comply with ISO 27032 guidelines and FDA Cybersecurity in Medical Devices requirements, providing enhanced protection against threats*
- DICOM-compatible software supports compliance with the Code of Federal Regulations[7]

Technical specifications

TRADE NAME	***MonacoPro***
MODEL NAME	**P200TE**
MODEL NUMBER	**A10700**
optomap UWF Imaging	
IMAGING MODALITIES	**Color rg**
	Red-free *Sensory Retina*
	Choroidal
	Autofluorescence (*green af*)
RESOLUTION	**optomap *plus* : 14 µm optomap: 20 µm,**
LASER WAVELENGTHS	**Red laser: 635 nm**
	Green laser: 532 nm
EXPOSURE TIME	**Less than 0.4 seconds**
OCT Imaging	
SIGNAL TYPE	**Optical scattering from tissue**
SIGNAL SOURCE	**Spectral domain OCT, Wavelength 840 nm**
AXIAL RESOLUTION*	**< 7 micron (in tissue) < 5 micron (digital)**
TRANSVERSE RESOLUTION*	**< 20 micron (in tissue) < 15 micron (digital)**
SCANNERS	**Galavanometric X, Y mirrors**
SCAN DEPTH	**2.3 mm (in tissue)**
A-SCAN RATE	**Up to 70k cycles/sec**
SCAN TYPES	**Line Scans Width: 12 mm**
	Raster Scan
	Retina Topography Scan
	Optic Nerve Head (ONH) Topography Scan
	Retinal Nerve Fiber Layer (RNFL) Scan
System	
OPTICAL POWER	**Laser safety Class-1 following IEC/EN60825-1**
FOOT PRINT	**Width: 550 mm / 22 in, Depth: 570 mm / 23 in Height: 608 - 632 mm / 24 - 25 in**
WEIGHT	**Max 40 kg**
TABLE SPACE REQUIREMENTS	**Width: 887 mm / 35 in, Depth: 600 mm / 24 in Height: 725 to 1205 mm / 29 - 48 in**
SYSTEM VOLTAGE	**100-240V, 50/60Hz**
POWER CONSUMPTION	**300 VA**

NOTE: Specifications are subject to change without notice.

1. Aiello. Integrating Macular Optical Coherence Tomography with Ultrawide Field Imaging in a Diabetic Retinopathy Telemedicine Program Using a Single Device. Retina. 2023.
2. Fundus autofluorescence and spectral domain optical coherence tomography as predictors for long-term functional outcome in rhegmatogenous retinal detachment. Graefe's Archive for Clinical and Experimental Ophthalmology. 2019.
3. Chaglasian. Accuracy of Glaucoma Detection with a Novel Imaging Device: Combined UWF-SLO and SD-OCT. ARVO 2024.
4. Marcus et al. Association of Predominantly Peripheral Lesions on Ultra-Widefield Imaging and the Risk of Diabetic Retinopathy Worsening Over Time. JAMA Ophthalmol. 2022 Oct 1;140(10):946-954.
5. Legarreta. Imaging of Peripheral Retina with Optos Ultra-Widefield Imaging: Evaluation of Aperture Size on Image Quality. ARVO 2012.
6. Friberg. Advances in retinal imaging of eyes with hazy media: Further Studies. ARVO 2011.
7. All Covered Entities must securely backup 'retrievable exact copies of ePHI' (CFR 164.308 (7)(ii)(A)).
*For US markets only

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