CA-800

—

Corneal Analyser

**TOPCON**

DEVICE TECHNOLOGIES

Pioneering Possibility.

CA-800

Ease of use

The CA-800 is easy to handle and use. From image acquisition to analysis, the on-board software is intuitive and user-friendly and the 10.1-inch capacitive touch screen provides quick navigation. Visual guidance supports fast and easy alignment and focusing on the eye; the "best image" selection mode automatically acquires the best-focused image. The CA-800 is a placido-based topography system that delivers accurate, high resolution images of the anterior corneal surface. The keratoscope cone with 24 rings equally spaced on a 43D sphere analyses over 100.000 data points, with axial and instantaneous curvature evaluation.

Integrated PC

The compact design of the CA-800 includes a fully integrated PC, so that an external PC is not required to manage a patient database for archiving and re-analysis purposes. The patient database is stored on an internal 320Gb SATA hard disk and the CA-800 includes a 32Gb SSD for a quick startup of the instrument and user interface.
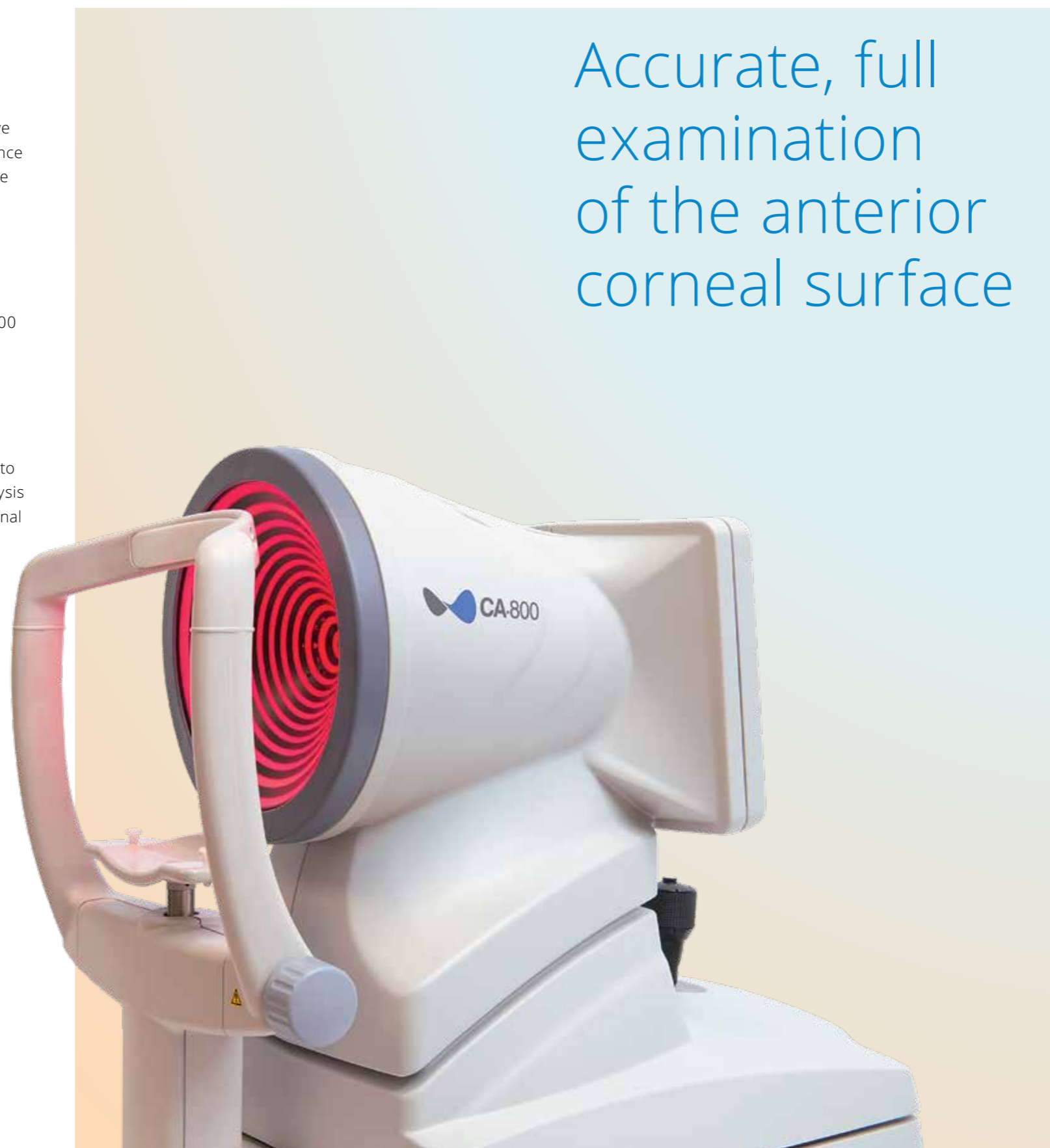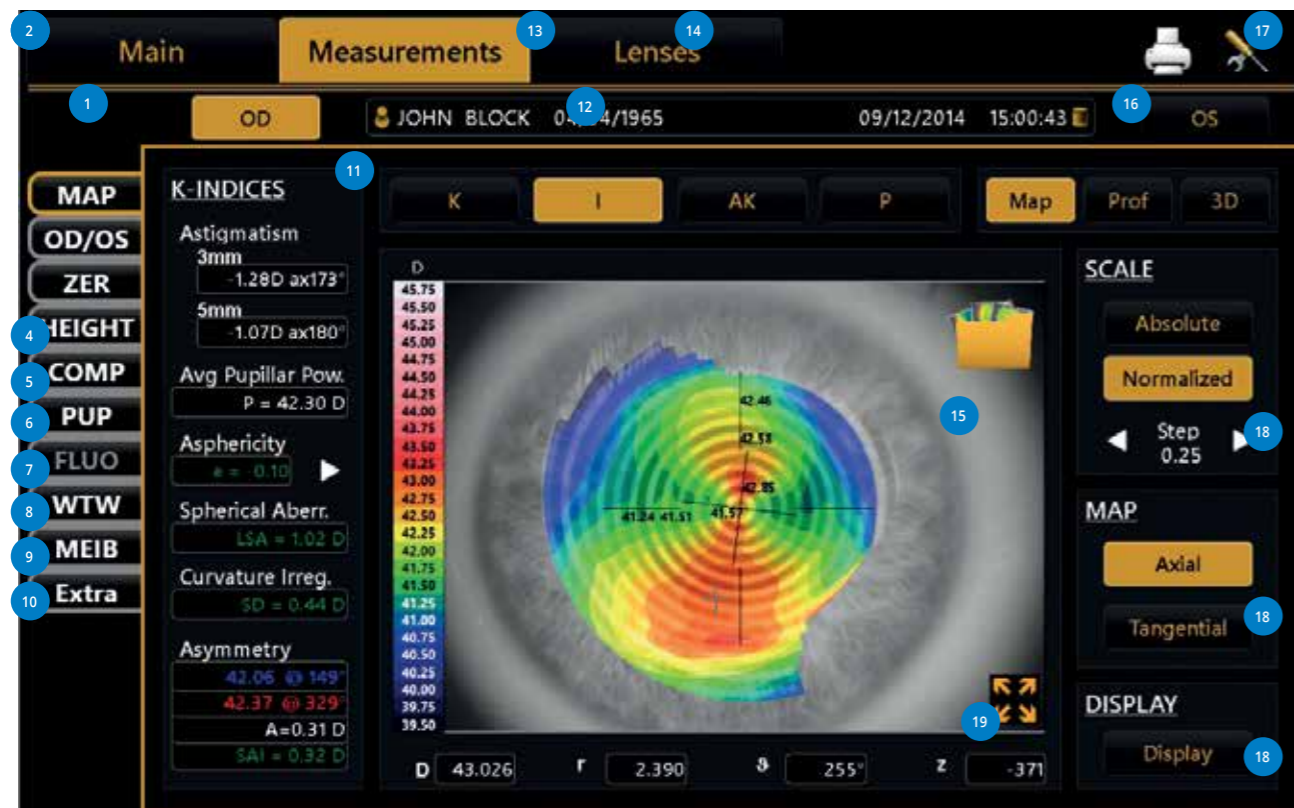
Accurate, full examination of the anterior corneal surface

CA-800 fully featured

» **Topography map**
  » Map full screen mode
  » Ring editing
  » Keratoconus screening (KPI)
  » Full 3D map of corneal surface
  » Automated best image selection

» **OD/OS results on same screen**

» **Corneal wavefront (Zernike) analysis**

» **Corneal surface height map**

» **Comparison map**
  » Reviewing of previous patient examinations

» **Differential map**
  » Post-operative monitoring of corneal healing

» **Pupillometry**
  » Automated pupil recognition
  » Dynamic, Photopic, Mesopic & Scotopic
  » Latency graph

» **Real time fluorescein acquisition and imaging**
  » Internal yellow barrier filter

» **White to white measurement**

» **Meibomian gland analysis**

» **Contact lens fitting simulation**
  » Complete contact lens fitting software
  » Contact lens database on-board

» **Toric IOL calculation**
  » Oculentis

» **10.1-inch capacitive touch screen**

» **Fully integrated patient database**

All features accessible on just one screen

1. Patient database and acquisition
2. Topography
3. OD/OS on one screen
4. Aberrometry
5. Height map
6. Comparison and Differential map
7. Pupillometry
8. Fluorescein imaging
9. White to white
10. Meibography

11. Patient ID
12. IOL calculation[1] and Contact lens fitting
13. Keratometry and Indices
14. Keartoconus screening
15. Ring editing
16. Report printing
17. 3D map
18. Display options
19. Full screen mode

Acquisition

The CA-800 is easy to use. Visual signals support fast and easy alignment and focusing on the patients eye. The CA-800 has a Right and Left eye detection and prevents incorrect savings in Right / Left eye measurements. The automated best image selection mode in the software of the CA-800 decides the best focused position and automatically acquires the image. Acquistions can be made for topography, pupillometry and real time fluorescein imaging.

Keratoconus screening

With the CA-800, signs of asymmetry of the cornea can easily be detected even in an early stage. By analysing the apical curvature, apical gradient and symmetry of the cornea, a Keratoconus probability index will show in colour code (green, yellow & red) if the topography is compatible with Keratoconus. With the CLMI (Cone Location and Magnitude Index) it is easy to follow-up on keratoconus and keratoconus like patterns.

Corneal Zernike analysis

The Zernike analysis module consists of 36 polynomials into the 7th order, and provides a clear view on the optical deficiencies which can disturb vision. Based on this information, the CA-800 provides the visual acuity summary. Zernike analysis is the basis for the calculation of the ablation area for laser treatment. The Zernike expansion coefficient is used to determine which component(s) dominate the aberration structure of the cornea and to what degree.

All features accessible on just one screen
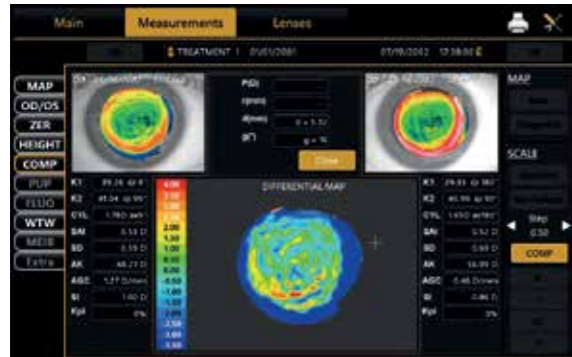
Corneal comparison & differential map

With the CA-800, it is easy to compare topography maps between two examinations of a patient, which can be used for follow up and for pre- and post-operative corneal analysis. With the differential map, progress in recovery of the cornea can be observed after refractive surgery. Parameters such as keratometry, apical curvature and corneal symmetry can be analysed to follow the development of any corneal surface changes. The CA-800 comparison and differential maps help you with the treatment of collagen cross linking to stop the development of corneal keratoconus.

Meibomian gland analysis

With the Infra-red illumination of the CA-800, the Meibomian Glands of the upper and lower eyelid can be captured and analysed. Posterior blepharitis is the most common form of lid margin disease. MGD (Meibomian Gland Dysfunction) can cause or exacerbate dry eye symptoms and eyelid inflammation. The oil glands become blocked with thickened secretions. Chronically clogged glands eventually become unable to secrete oil which results in permanent changes in the tear film and dry eyes. With the CA-800, MGD can easily be observed and compared with previous Meibomian gland examinations of the patient.

Pupillometry

The CA-800 is equipped with two white LED's for dynamic and static pupillometry. With the CA-800 on-board, the user can check the pupil position and diameter (from Photopic to Scotopic condition) in relation to the position of the optical zone in Ortho-K, laser treatment or refractive surgery treatments. Dynamic pupillometry provides clear information on the reaction time of the pupil and the contraction of the pupil.

Contact lens fitting simulation

The CA-800 provides the perfect platform for contact lens fitting. Simulation software is provided on-board, which automatically selects the best fitting contact lens based upon an included complete contact lens database for all the main manufacturers (upgradable and customizable by the user). With the option to input refractive powers, the contact lens proposal is accurate and complete. The on-board fluorescein acquisition system allows full control of the contact lens position on the eye. The comparison between different contact lenses is easy in order to ensure the best fit.

Fluorometry

The CA-800 incorporates eight blue LED's for fluorescein images and real time fluorescein videos which are essential for contact lens fitting. During every measurement, the CA-800 automatically registers the pupil diameter, which is critical information during contact lens fitting. Real time fluorescein films allow the eye care practitioner to judge the movement of the contact lens on the cornea, the distribution of the tear film under the contact lens as well as the wetting of the outer contact lens surface. The corneal condition can be observed by recording a real time fluo film without wearing a contact lens. The tear film condition, corneal artifacts and break up tear time (BUT) can be observed.
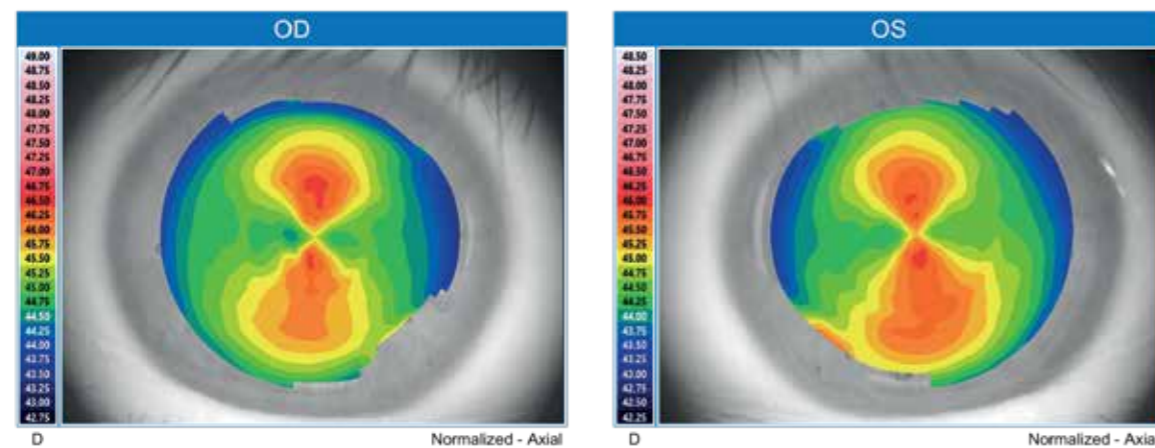
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Patient Information

Patient	CORNEAL ANALYZER	Gender	M
Patient ID	12345678	Exam Date	17/02/2015 13:37:29
Date of Birth	01/01/2000	Surgeon	

TOPOGRAPHICAL MAP

OD — Normalized - Axial

OS — Normalized - Axial

Sim-K

K1	K2	CYL	K1	K2	CYL
44.84 @ 180°	46.27 @ 90°	-1.43D ax180°	44.36 @ 7°	45.78 @ 97°	-1.41D ax7°

Cornea Data

Cornea Decentralization X - Y	-0.23 mm	0.04 mm	Cornea Decentralization X - Y	0.20 mm	-0.11 mm
Diameter	12.28 mm		Diameter	12.27 mm	
Pupillar Decentralization X - Y	H= -0.04 mm	V= 0.11 mm	Pupillar Decentralization X - Y	H= -0.18 mm	V= 0.14 mm
Avg. Pupillar Diam.	3.54 mm		Avg. Pupillar Diam.	4.88 mm	
Avg. Pupillar Power	45.51 D		Avg. Pupillar Power	45.15 D	

Keratoconus Screening

AK	AGC	SI	Kpi	AK	AGC	SI	Kpi
45.80 D	0.50 D/mm	0.05 D	0%	46.26 D	0.88 D/mm	0.30 D	0%
Topography not compatible with keratoconus				Topography not compatible with keratoconus			

A	D	Ro - Teta	Rnd	A	D	Ro - Teta	Rnd

Keratorefractive Indices

SD	SAI	e	Kc	SD	SAI	e	Kc
SD = 0.38 D	SAI = 0.19 D	e = 0.42	45.45	SD = 0.29 D	SAI = 0.34 D	e = 0.36	45.18

Notes

CA800 V.1.0.7

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Patient Information

Patient	CORNEAL ANALYZER	Gender	M
Patient ID	12345678	Exam Date	06/03/2015 18:06:43
Date of Birth	01/01/2000	Surgeon	

PUPILLOMETRY

OD

Latency
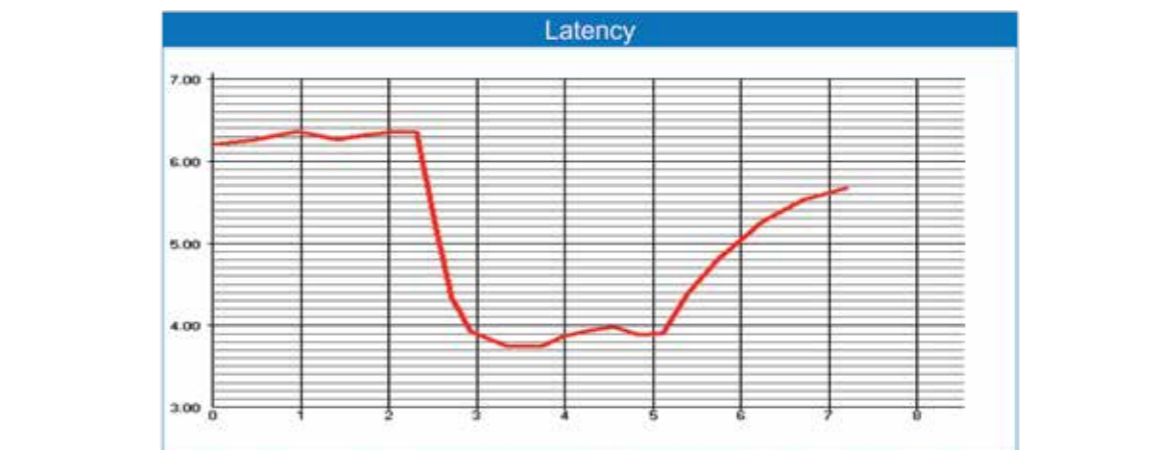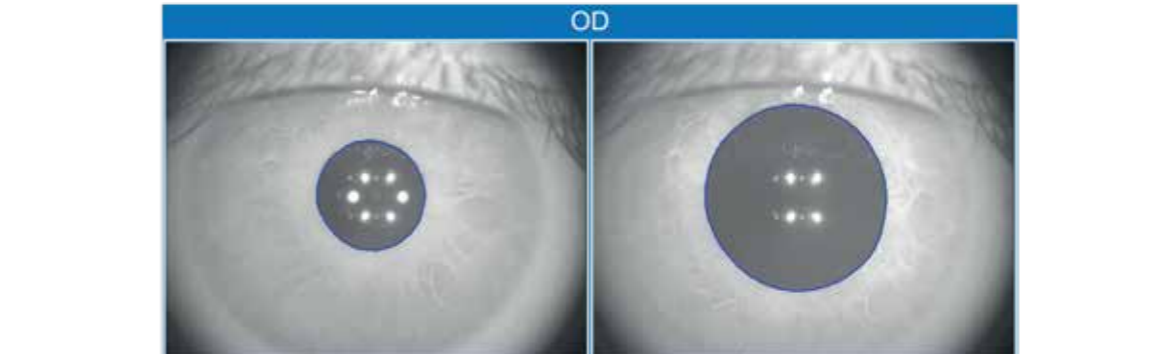
Dynamic pupillography

Diameter		Pupil Center	
Min	Max	Center Mean	Std Dev.
3.74 mm	6.36 mm	-0.22 mm / 0.01 mm	0.02 mm

Photopic pupillography

Diameter		Pupil Center	
Avg. Diam.	Diam. Std Dev.	Center X - Y	Cen. Std Dev.
3.76 mm	0.06 mm	-0.20 mm / 0.03 mm	0.06 mm

Mesopic pupillography

Diameter		Pupil Center	
Avg. Diam.	Diam. Std Dev.	Center X - Y	Cen. Std Dev.
4.90 mm	0.33 mm	-0.18 mm / 0.02 mm	0.33 mm

Scotopic pupillography

Diameter		Pupil Center	
Avg. Diam.	Diam. Std Dev.	Center X - Y	Cen. Std Dev.
5.53 mm	0.11 mm	-0.16 mm / -0.01 mm	0.11 mm

Notes

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ZERNIKE report (OD/OS)

CONTACT LENSES report (OD)

Sim-K		
K1	K2	CYL
44.84 @ 180°	46.27 @ 90°	-1.43D ax180°

Refraction			
Sphere	Cylinder	Axis	VD
1.25	-0.50	110	12.00

Cornea Data		
Cornea Decentralization X - Y	---	---
Diameter		12.28 mm

Lens Data		
Brand	Model	Base Curve
Generic	Tricurve	7.6
Diameter	Power	Toricity
9.8		
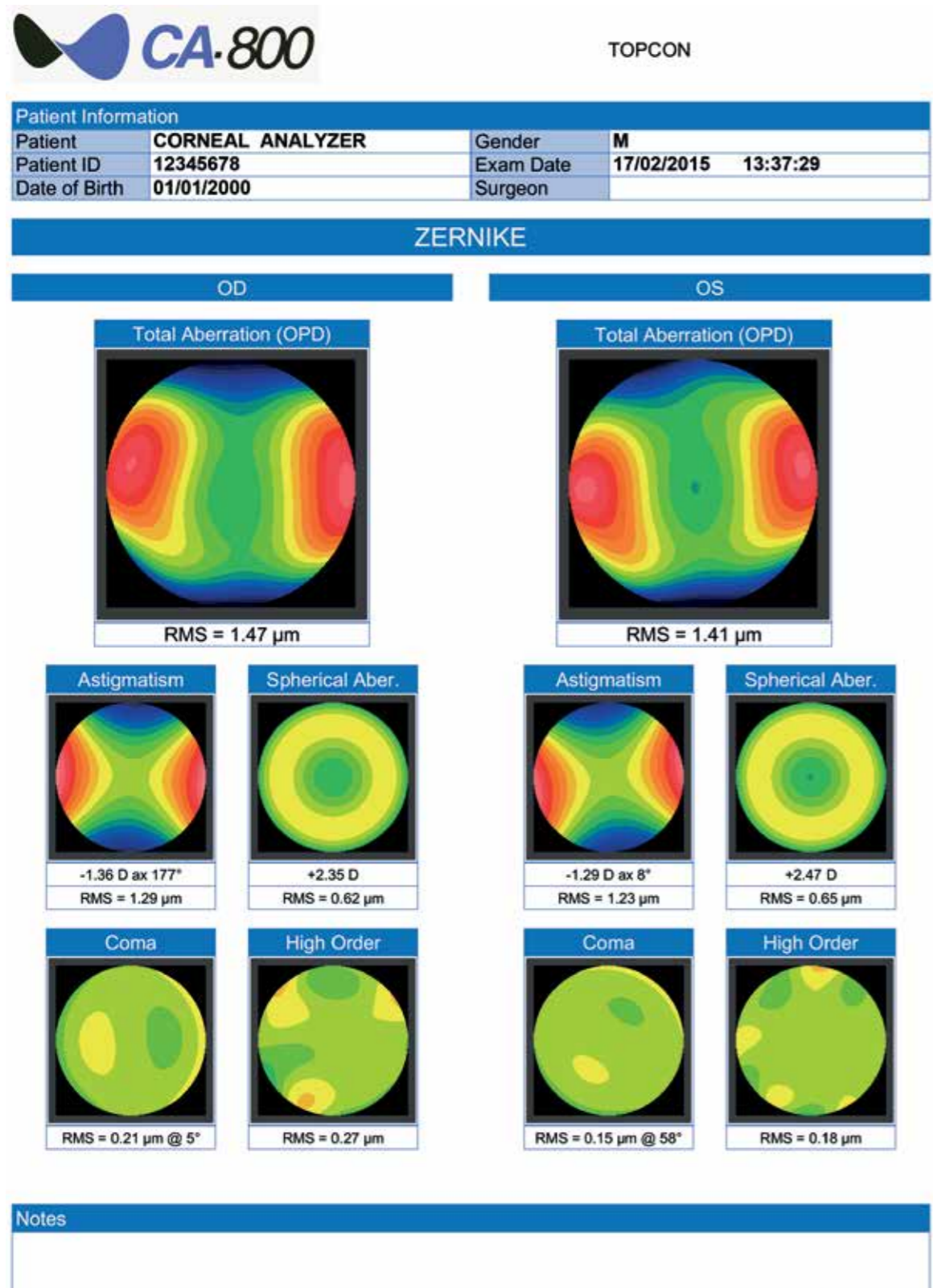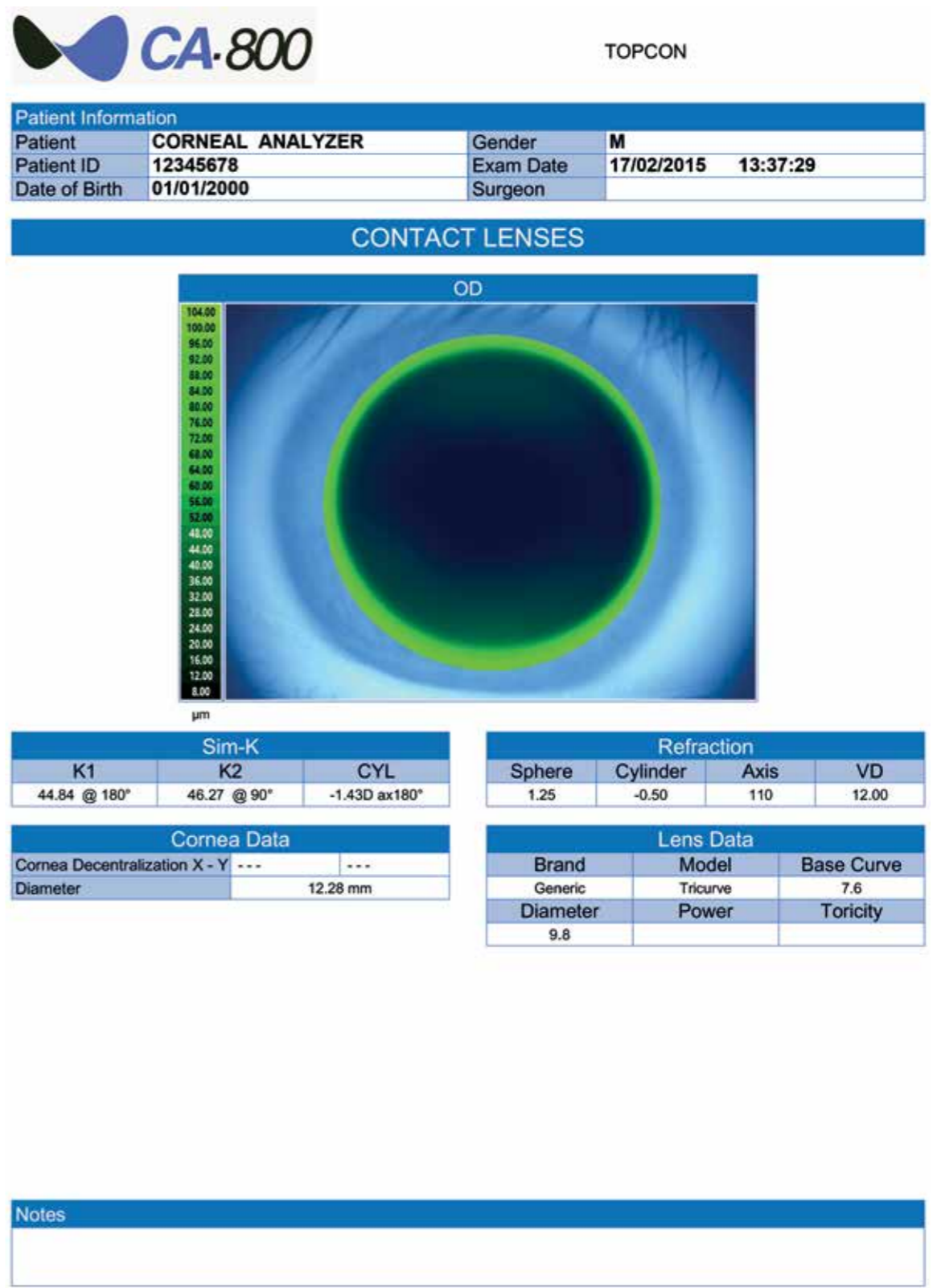
Specifications

Keratoscope cone	24 rings equally distributed on a 43D sphere
Analysed points	Over 100.000
Measured points	Over 6.200
Corneal coverage	Up to 9.8mm on a sphere of radius 8.00mm (42.2 diopters with N=1.3375)
Diopter power range	From 1D to 120D
Resolution	,+/- 0.01D, 1 micron
Accuracy / Precision axial radius	,+/- 0.03mm altimetric data +/- 2µm at 4mm
Capture system	Auto-focus with Auto-capture
Output ports	USB, LAN
Monitor	LCD 10.1 inch capacitive touch screen
Database	Internal
Pupillometry	Dynamic, Photopic, Mesopic, Scotopic
Fluorescein	Image, Video
Report	Corneal map, Comparison map, Contact lens, Height map, Zernike analysis, pupillometry, Toric IOL , Screenshot
Working environment	10°-40°C, Relative humidity 30-75% (no dewing), Atmospheric pressure 700-1060hPa
Power source	AC 100-240V 47-63 Hz
Power consumption	<100VA
Dimensions	320mm (W) x 490mm (H) x 470mm (L), 15 Kg
Connections	Wi-Fi Optional, LAN integrated
Printing options	USB printer, Network printer, PDF on network shared folder, PDF on USB
Operating System	Windows 8 Embedded
RAM	2 GB
Hard Disk	320 GB SATA Hard Drive (database storage) 32 GB Solid State Drive (operating system and application software)

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DEVICE TECHNOLOGIES

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RA-01072019/CP