

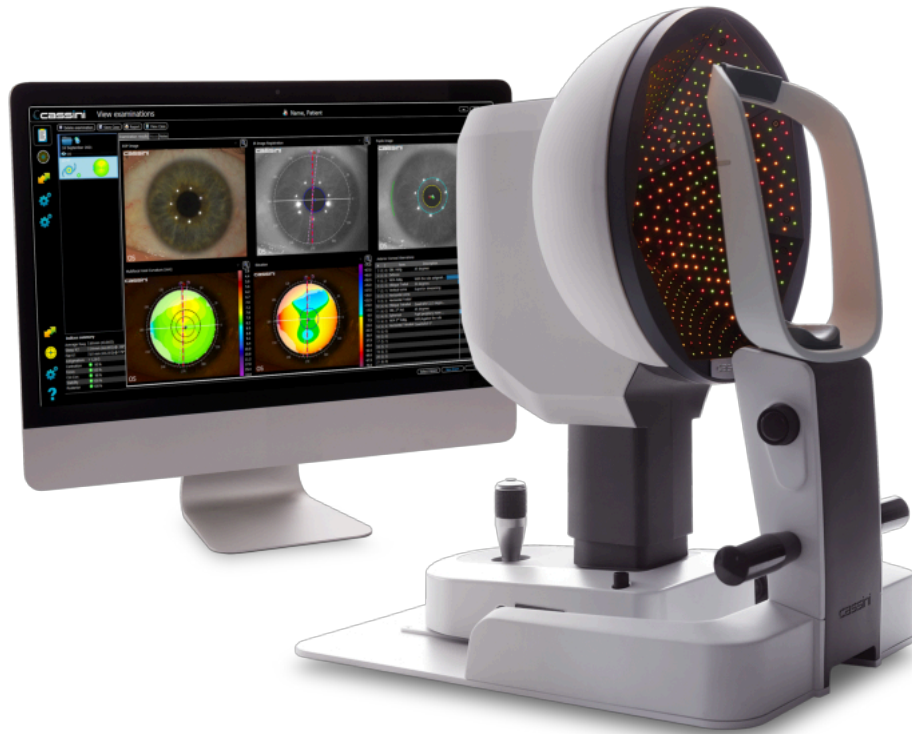
cassini
The world in vision



Cassini Ambient

Reflection-Based LED Corneal Topography with
Infrared Illumination and Iris Pattern Recognition

Designed for the Modern Refractive Cataract Surgeon



Cassini Ambient provides the diagnostic foundation for cataract and refractive planning by delivering highly repeatable corneal measurements.

Using multicolor visible LEDs combined with infrared illumination, Ambient captures anterior and posterior corneal data in a single acquisition, supporting efficient image capture while reducing motion-dependent variability.

Measurement Method

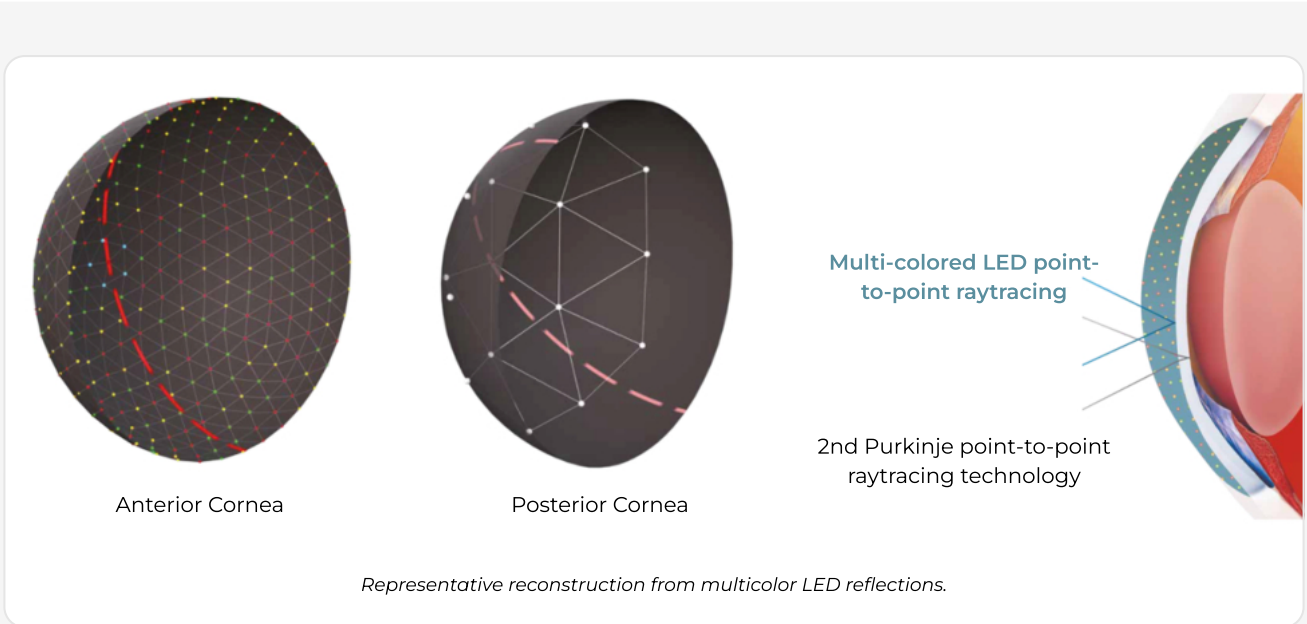
Reflection-based LED topography

Key Characteristics

- ✓ Instantaneous acquisition of anterior and posterior cornea support reliable analysis
- ✓ Data continuity from preoperative planning to the OR via iris pattern recognition
- ✓ Zernike-based HOA analysis support premium IOL planning

Cassini LED Technology

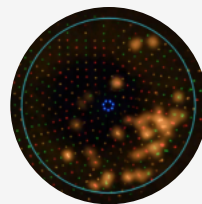
Cassini's LED architecture projects a multicolor illumination pattern onto the cornea and captures reflections using visible and infrared cameras. Ray-tracing reconstruction generates a detailed representation of the anterior and posterior corneal surfaces.



Instantaneous capture of LED reflections avoids motion-dependent variability associated with rotating or scanning systems, supporting reproducible data for premium IOL planning.

- ✓ High sensitivity to radial and axial displacement
- ✓ Proprietary spot-identification pattern for robust ray-tracing
- ✓ Iris pattern recognition supporting continuity from preoperative planning to the OR

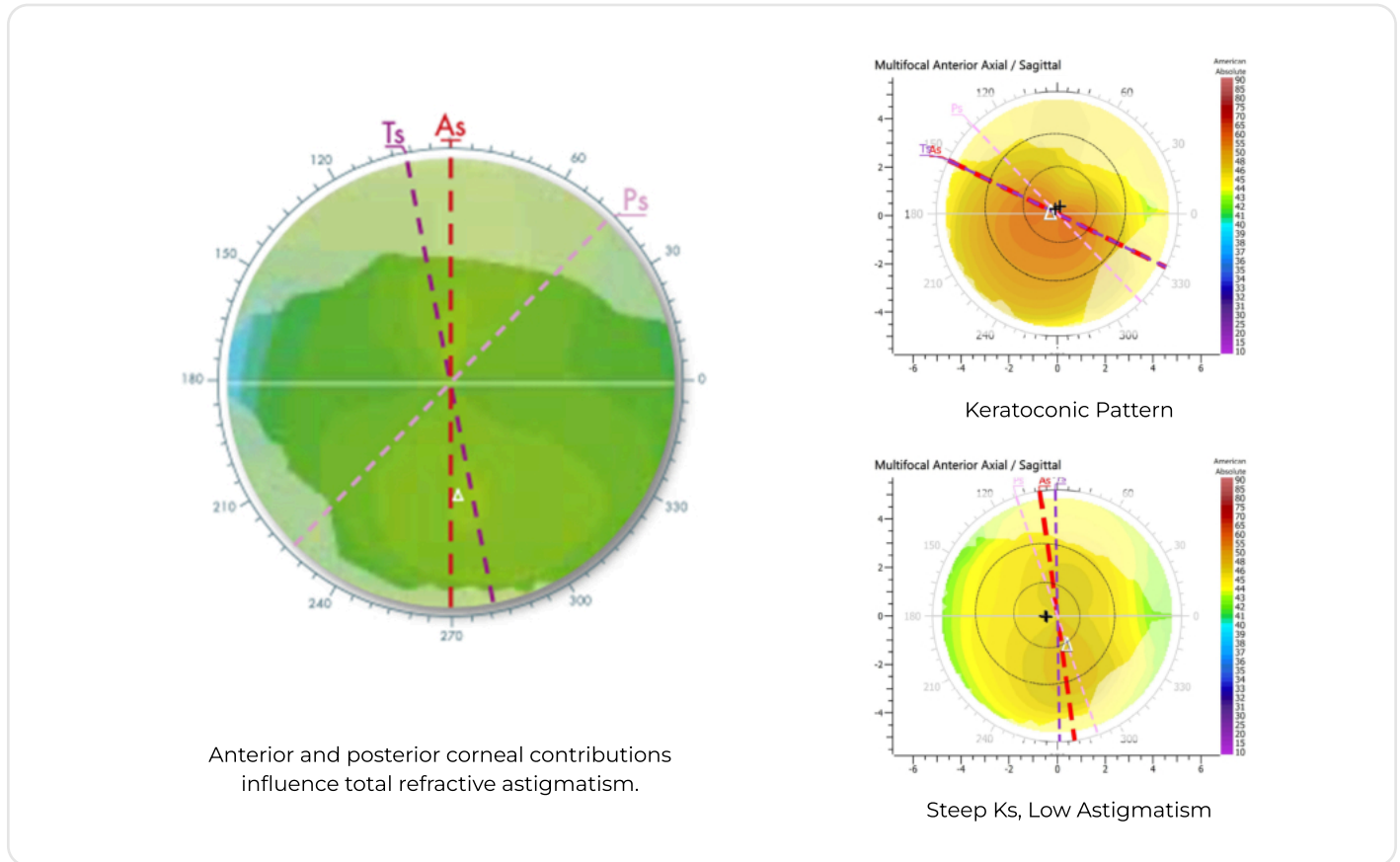
Ocular surface visualization for preoperative corneal assessment



Ocular Surface Qualifier (OSQ) Ocular Surface Visualization (OSV)

Total Corneal Astigmatism

Anterior and posterior cornea captured in a single diagnostic acquisition



Cassini Ambient captures both anterior and posterior corneal surfaces to derive total corneal astigmatism. LED-based reflection and infrared imaging support ray-tracing-based modeling while preserving spatial accuracy.

The result is highly repeatable measurements that provide a reliable reference for surgical planning and alignment.

Technology Highlights

- ✓ Measurement of anterior and posterior corneal surfaces within a single diagnostic dataset
- ✓ Ray-tracing-based calculation of total corneal astigmatism
- ✓ Corneal modeling that preserves the relationship between anterior and posterior surfaces
- ✓ Total corneal astigmatism reported within the diagnostic reference used for planning

SMART Diagnostic Report

Consolidated diagnostic output for cataract and refractive planning

By consolidating measured corneal data into a unified diagnostic dataset, the SMART Diagnostic Report provides a structured reference for reviewing total corneal astigmatism and alignment-related parameters without reliance on data stitching or cross-device reconciliation.

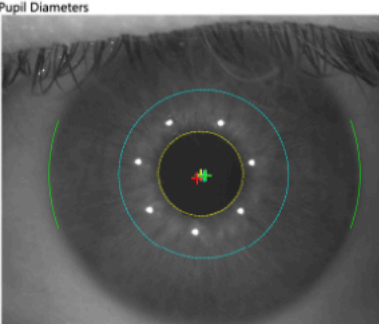
Patient name
Patient id
Date of Birth

OS

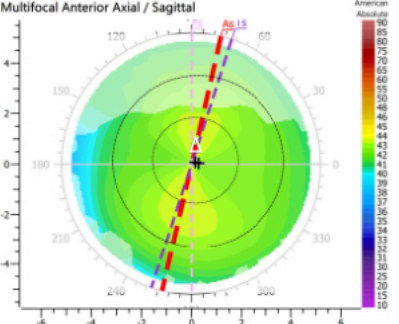
Clinic
Capture date June 19, 2025 12:36 pm
Physician none

MAPS

Pupil Diameters



Multifocal Anterior Axial / Sagittal



<p>MORPHOLOGY</p> <p>Photopic Pupil</p> <p>Diameter 3.40 mm Angle KAPPA 0.21 mm @ 43° Vertical COMA -0.010 μm Spherical Aberration 0.031 μm HOA 0.068 μm</p> <p>Mesopic Pupil</p> <p>Diameter 6.82 mm Angle KAPPA 0.30 mm @ 21° Vertical COMA -0.633 μm Spherical Aberration 0.112 μm HOA 0.922 μm</p> <p>Limbus Morphology</p> <p>WZW 12.6 mm Angle Alpha 0.36 mm @ 19°</p> <p>Visual Axis</p>	<p>CORNEAL ABERRATIONS</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>#Z</th> <th>Term</th> <th>Photopic zone (3.40mm)</th> <th>Mesopic zone (6.82mm)</th> <th>Surgeon zone (6.00mm)</th> </tr> </thead> <tbody> <tr><td>3(2,-2)</td><td>Oblique Astigmatism</td><td>0.212</td><td>0.767</td><td>0.582</td></tr> <tr><td>4(2,0)</td><td>Defocus</td><td>0.133</td><td>1.273</td><td>0.933</td></tr> <tr><td>5(2,2)</td><td>With/Against Astigmatism</td><td>-0.451</td><td>-1.409</td><td>-1.329</td></tr> <tr><td>6(3,-3)</td><td>Oblique Trefoil</td><td>-0.024</td><td>0.255</td><td>0.033</td></tr> <tr><td>7(3,-1)</td><td>Vertical coma</td><td>-0.010</td><td>-0.633</td><td>-0.257</td></tr> <tr><td>8(3,1)</td><td>Horizontal coma</td><td>0.018</td><td>0.263</td><td>0.143</td></tr> <tr><td>9(3,3)</td><td>Horizontal Trefoil</td><td>0.046</td><td>0.008</td><td>0.079</td></tr> <tr><td>10(4,-4)</td><td>Oblique Tetrafoil</td><td>0.007</td><td>-0.033</td><td>0.006</td></tr> <tr><td>11(4,-2)</td><td>Oblique 2nd astigmatism</td><td>-0.007</td><td>0.006</td><td>-0.015</td></tr> <tr><td>12(4,0)</td><td>Spherical Aberration</td><td>0.031</td><td>0.112</td><td>0.148</td></tr> <tr><td>13(4,2)</td><td>With/Against 2nd Astigmatism</td><td>-0.011</td><td>0.309</td><td>0.090</td></tr> <tr><td>14(4,4)</td><td>Horizontal Tetrafoil</td><td>0.013</td><td>-0.200</td><td>-0.041</td></tr> <tr><td></td><td>HOA</td><td>0.068</td><td>0.922</td><td>0.395</td></tr> </tbody> </table>	#Z	Term	Photopic zone (3.40mm)	Mesopic zone (6.82mm)	Surgeon zone (6.00mm)	3(2,-2)	Oblique Astigmatism	0.212	0.767	0.582	4(2,0)	Defocus	0.133	1.273	0.933	5(2,2)	With/Against Astigmatism	-0.451	-1.409	-1.329	6(3,-3)	Oblique Trefoil	-0.024	0.255	0.033	7(3,-1)	Vertical coma	-0.010	-0.633	-0.257	8(3,1)	Horizontal coma	0.018	0.263	0.143	9(3,3)	Horizontal Trefoil	0.046	0.008	0.079	10(4,-4)	Oblique Tetrafoil	0.007	-0.033	0.006	11(4,-2)	Oblique 2nd astigmatism	-0.007	0.006	-0.015	12(4,0)	Spherical Aberration	0.031	0.112	0.148	13(4,2)	With/Against 2nd Astigmatism	-0.011	0.309	0.090	14(4,4)	Horizontal Tetrafoil	0.013	-0.200	-0.041		HOA	0.068	0.922	0.395	<p>QUALITY FACTORS</p> <ul style="list-style-type: none"> Centration 95% Focus 87% Corneal Coverage 87% Stability 100% Posterior 100% <p>SURFACE INDICES</p> <ul style="list-style-type: none"> Q(Asphericity) -0.051 SRI(Surface Regularity Index) 0.153 SAI(Surface Asymmetry Index) 0.170
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K-READINGS

<p>Keratometric SimK (n=1.3375)</p> <p>Average Kavg 43.01 D (7.85 mm) Steep K2 43.75 D (7.71 mm) @ 77° Flat K1 42.28 D (7.98 mm) @ 167° Astigmatism +1.48 D</p>	<p>Total Cornea</p> <p>Astigmatism +1.28 D @ 73° (Steep K2)</p>
<p>TCA ΔK</p> <p>Average Kavg 43.17 D Steep K2 43.81 D @ 73° Flat K1 42.53 D @ 163° Astigmatism +1.28 D</p>	<p>Posterior SimK (n=1.336)</p> <p>Average Kavg -6.02 D (6.64 mm) Steep K2 -6.25 D (6.40 mm) @ 90° Flat K1 -5.80 D (6.90 mm) @ 0° Astigmatism -0.45 D</p>

NOTES

Pt on Fiomax, LASIK OU 2014

OS

SMART FOR MULTIFOCAL PLANNING REPORT

S/N CA3126 VERSION 3.5.1.5301

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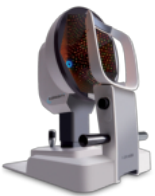
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Normal cornea with ~1.5 D bowtie astigmatism case sample.

The SMART Diagnostic Report presents corneal diagnostic data derived from Cassini Ambient measurement within a single, structured view.

From Diagnostic Acquisition to Surgical Implementation

Cassini Ambient establishes a diagnostic reference during acquisition that is carried through planning and shared with the operating room to support consistent visualization and alignment.



Acquisition

Diagnostic Reference Continuity

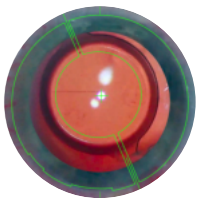
Instantaneous anterior and posterior corneal capture, combined with iris pattern recognition, provides a continuous diagnostic reference used through planning and intraoperative visualization.



Planning

Integrated Use of Diagnostic Data

The diagnostic reference established during acquisition is available within the planning environment, enabling use of the same dataset across integrated components without manual re-entry.



Implementation

Flexible Workflow Use

The diagnostic reference is shared with the operating room through the integrated planning environment and optional Cassini components, including microscope-agnostic solutions and/or direct FLACS connectivity (select systems).

Technical Specifications

Measurement Technology

Category	Specification
Measurement Method	Reflection-based LED topography using multi-color visible LEDs and infrared illumination
Anterior Surface	679 LEDs (7 blue, 224 red, 224 yellow, 224 green)
Posterior Surface	Infrared LED-based posterior corneal assessment (model-dependent)
Points Measured	>700 reflection points analyzed per scan
Corneal Coverage	10.0 mm diameter measurable zone
Acquisition	Instantaneous capture designed to minimize motion artifacts
Performance (per IFU)	Anterior power and astigmatism <0.10 D; TCA <0.15 D; TCA axis <6°; Anterior axis <3°
Higher-Order Aberrations	Zernike polynomials up to 8th order, Adjustable preferred zone (1-10mm)
TCA Calculation	Ray-tracing combination of anterior and posterior surfaces

Diagnostic Outputs Overview

Category	Outputs
Curvature Maps	Axial curvature, Tangential curvature, Elevation, Refractive power
Curvature Astigmatism and Refractive Parameter	Anterior K, Posterior K, Total Corneal Astigmatism (TCA), Steep/flat axis orientation, SimK (anterior, posterior, total)
Aberrations	Zernike HOA coefficients
Ocular Surface	Ocular surface dynamics, Ocular surface visualization
Imaging	External ocular photography (EOP), Color image registration
Quality Factors	Focus, Centration, Corneal coverage, Stability

Software and Connectivity

Category	Specification
Planner Integration	Surgical Planner (Ambient Module)
OR Integration	Cassini Guidance System, FLACS Connectivity (select systems)
Iris Registration	EOP or IR imaging (connection dependent)
Data Export	DICOM, CSV, PDF
Standard Reports	Diagnostic, Cataract, SMART (Mesopic/Photopic, Aberrations, K-readings, indices), Combined (OU)
Optional Reports	FLACS alignment, EOP, Astigmatism planning

Instrument Specifications

Category	Specification
Dimensions	44 × 32 × 55 cm
Weight	15 kg
Chinrest	55 mm travel
Power	100–240 VAC, 50/60 Hz, 60 W
Cameras	Color (visible); monochrome (IR)
Operating Conditions	10–35°C; 30–90% RH
Computer Requirements	Windows 11 Pro; 16 GB RAM; 512 GB SSD; ≥2 USB 3.0 ports

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Not approved for sale in all markets. Product availability and specifications may vary by region.
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