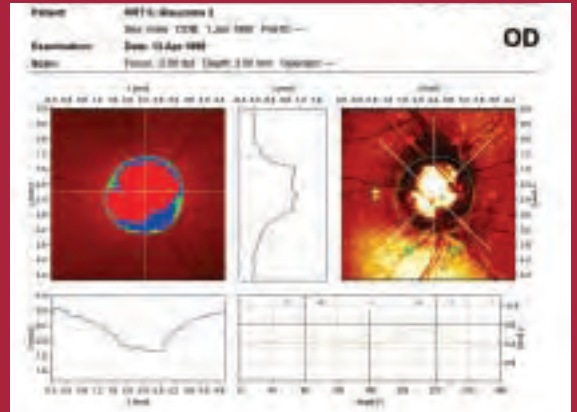


How to read the printout

HRT II



Patient and Examination Data

Focus: refraction set at the focus knob
Scan depth: image extent in z-direction

Topography Image

The colors in the topography image represent height. This is a false color picture. The brighter the color the more depressed the region is and the darker the color the more elevated the region is.

The red area marks the cup. The rest of the disc area is divided into a sloping (blue) and a stable (green) neuroretinal rim. Seldom appearing white areas describe parts of the stable (green) neuroretinal rim lower than the reference line (red). This can be an indicator of a misdrawn contour line in the region of the papillo-macular nerve fiber bundle.

Horizontal Height Profile

Height profile along the white horizontal line in the topography image. The subjacent reference line (red) indicates the location of the reference plane (separation between cup and neuroretinal rim). The two black lines perpendicular to the height profile denote the borders of the disc as defined by the contour line.

Top five Parameters

Parameter	normal	early	moderate	advanced
rim area: Area of neuroretinal rim (green and blue). Area enclosed by the contour line and located above the reference plane.				
rim area [mm²]	1.489 ± 0.291	1.393 ± 0.340	1.260 ± 0.415	0.817 ± 0.334
rim volume: Volume of neuroretinal rim. Volume enclosed by the contour line and located above the reference plane.				
rim volume [mm³]	0.362 ± 0.124	0.323 ± 0.156	0.262 ± 0.139	0.128 ± 0.096
cup shape measure: Measure for the overall three-dimensional shape of the optic disc cupping.				
cup shape measure	-0.181 ± 0.092	-0.147 ± 0.098	-0.122 ± 0.095	-0.036 ± 0.096
height variation contour: Height variation of the retinal surface along the contour line: height difference between the most elevated and most depressed point of the contour line.				
height variation contour [mm]	0.384 ± 0.087	0.364 ± 0.100	0.330 ± 0.108	0.256 ± 0.090
mean RNFL thickness: Mean thickness of the retinal nerve fiber layer along the contour line. Measured relative to the reference plane.				
mean RNFL thickness [mm]	0.244 ± 0.063	0.217 ± 0.076	0.182 ± 0.086	0.130 ± 0.061

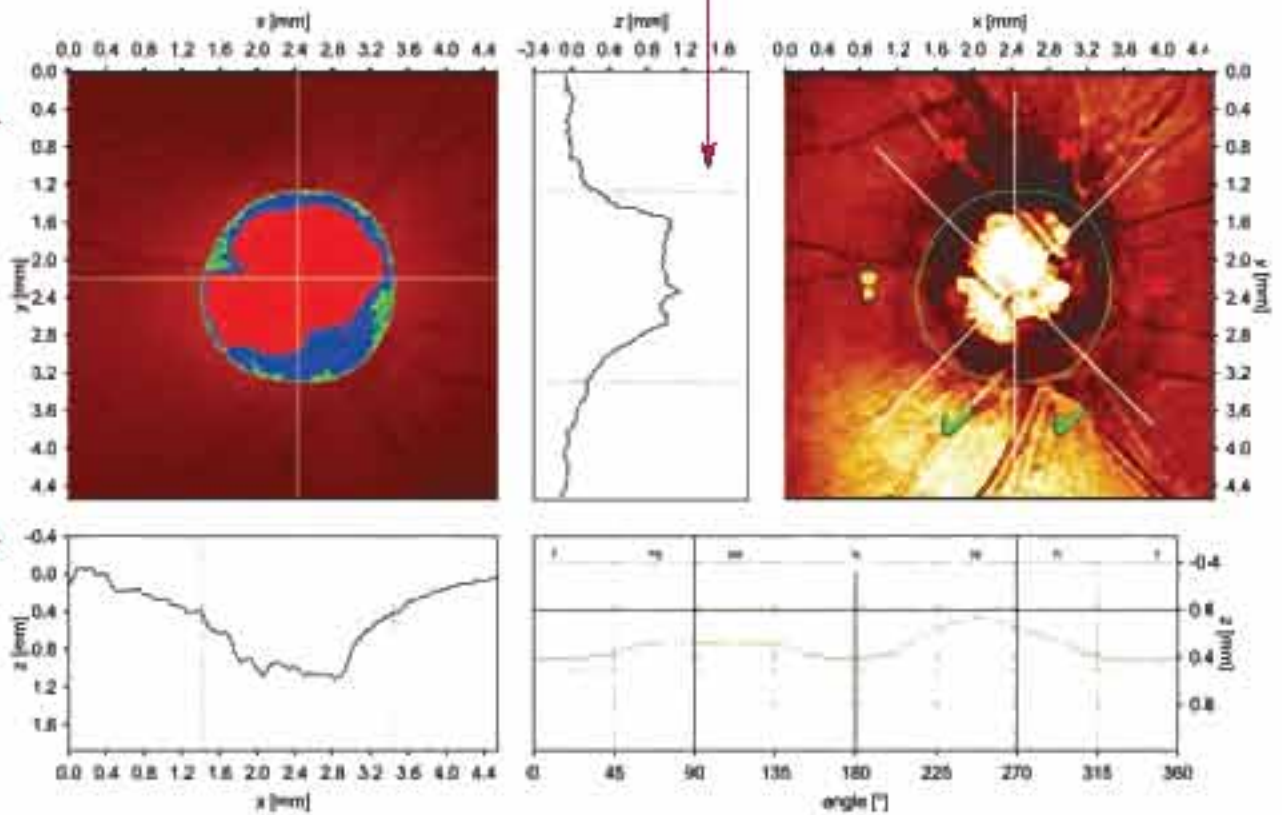
Possible classifications: "Within normal limits", "Borderline", "Outside normal limits".

**Heidelberg Retina Tomograph II
Initial Report**



Patient: HRT II, Glaucoma 2
Sex: male **DOB:** 1.Jan.1990 **Pat-ID:** ---
Examination: **Date:** 13.Apr.1999
Scan: **Focus:** -2.00 dpt **Depth:** 3.50 mm **Operator:** ---

OD



Stereometric Analysis ONH	
Disc Area	3.381 mm ²
Cup Area	2.100 mm ²
Rim Area	1.282 mm ²
Cup Volume	0.778 mm ³
Rim Volume	0.594 mm ³
Cup/Disk Area Ratio	0.621
Linear Cup/Disk Ratio	0.789
Mean Cup Depth	0.294 mm
Maximum Cup Depth	0.796 mm
Cup Shape Measure	-0.018
Height Variation Contour	0.371 mm
Mean RNFL Thickness	0.182 mm
RNFL Cross Sectional Area	1.788 mm ²
Reference Height	0.491 mm
Topography Std Dev.	15 μm

Analysis	Result
Analysis 1	OK
Analysis 2	OK
Analysis 3	OK
Analysis 4	OK
Analysis 5	OK
Analysis 6	OK
Analysis 7	OK

Comments:

Date: 10.Apr.2001 **Signature:**

(*) Modified regression classifier (Ophthalmology 1998; 105:1557-1563).
 Classification based on statistics. Diagnostic a physician's responsibility.

Classification: Outside normal limits (*)

Vertical Height Profile

Height profile along the white vertical line in the topography image. The subjacent reference line (red) indicates the location of the reference plane (separation between cup and neuroretinal rim). The two black lines perpendicular to the height profile denote the borders of the disc as defined by the contour line.

Reflection Image

This is a false color picture. The brighter the color the more light is reflected from this region. In the reflection image the optic nerve head is divided into 6 sectors. These sectors are compared to a normal database and then classified.

Moorfields regression analysis means that the rim (green and blue) and the disc area (green, blue and red) for each sector are compared to a normal database. Depending on this patient's age and overall disc size the eye is then statistically classified as *'within normal limits'* ✓, *'borderline'* ⚠ or *'outside normal limits'* ✗.

Mean Height Contour Graph

The retinal surface height profile (green) along the drawn contour line (green). The subjacent reference line (red) indicates the location of the reference plane (separation between cup and neuroretinal rim). This reference plane is placed 50 µm under the surface of the papillo-macular nerve fiber bundle, which can be found in the temporal sector between 350°-356°. Therefore the reference plane is approximately at the base of the nerve fiber layer. The dark black line represents the mean peripapillary retinal surface height, this is then set as a zero point of the height (z-axis).

The height profile always starts temporal at 0°. The height profile is drawn clockwise for a right eye and counterclockwise for a left eye. The height difference between the reference line (red) and the height profile corresponds to the retinal nerve fiber layer thickness along the contour line.

Moorfields Regression Analysis

This graphic visualizes the result of the Moorfields regression analysis. The whole column represents the total optic nerve head area in this specific sector. It is divided into the percentage of rim area (green) and percentage of cup area (red). You have to read the age dependent limits of the confidence intervals as follows:

- Predicted: 50% of the optic nerve heads in the normal database have a larger rim area than this limit.
- Low: 95.0/99.0/99.9% of the optic nerve heads in the normal database have a larger rim area than this limit.
- If the percentage of the rim is larger than or equal to the 95% limit, the respective sector is classified as *'within normal limits'*. ✓
- If the percentage of the rim is between the 95% and the 99.9% limits, the respective sector is classified as *'borderline'*. ⚠
- If the percentage of the rim is lower than the 99.9% limit, the respective sector is classified as *'outside normal limits'*. ✗

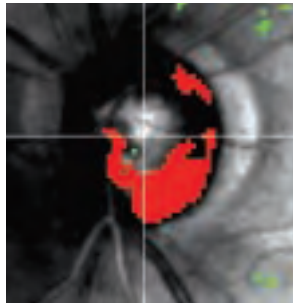
There is a global classification (1st column) and a classification for each single sector (2nd-7th column).

Image Quality Control by Overall 'Topography Standard Deviation'

< 10	excellent
10-20	very good
20-30	good
30-40	acceptable
40-50	look for ways to improve
> 50	low quality image, don't use for baseline

Differences in the Follow-Up Report

Stereometric Analysis ONH		Change
Disk Area	1.899	0.000 mm ²
Cup Area	0.998	0.258 mm ²
Rim Area	0.901	-0.258 mm ²
Cup Volume	0.264	0.054 mm ³
Rim Volume	0.209	-0.051 mm ³
Cup/Disk Area Ratio	0.525	0.135
Linear Cup/Disk Ratio	0.725	0.101
Mean Cup Depth	0.315	0.007 mm
Maximum Cup Depth	0.738	-0.088 mm
Cup Shape Measure	-0.083	0.092
Height Variation Contour	0.521	0.096 mm
Mean RNFL Thickness	0.197	-0.025 mm
RNFL Cross Sectional Area	0.964	-0.120 mm ²
Reference Height	0.290	0.027 mm
Topography Std Dev.	28	μm



Beginning with the 2nd Follow-Up exam regions with significant changes are color coded and shown as green (increased height) and red (decreased height) overlays. For better contrast the topography image in the Follow-Up Report is always black and white.

Changes of the stereometric parameters are shown.

Normal values of the HRT II stereometric parameters

Parameter	normal	early	moderate	advanced
disc area [mm ²]	2.257 ± 0.563	2.346 ± 0.569	2.310 ± 0.554	2.261 ± 0.416
cup area [mm ²]	0.768 ± 0.505	0.953 ± 0.594	1.051 ± 0.647	1.445 ± 0.562
rim area [mm²]	1.489 ± 0.291	1.393 ± 0.340	1.260 ± 0.415	0.817 ± 0.334
cup volume [mm ³]	0.240 ± 0.245	0.294 ± 0.270	0.334 ± 0.318	0.543 ± 0.425
rim volume [mm³]	0.362 ± 0.124	0.323 ± 0.156	0.262 ± 0.139	0.128 ± 0.096
cup/disk area ratio	0.314 ± 0.152	0.380 ± 0.179	0.430 ± 0.203	0.621 ± 0.189
mean cup depth [mm]	0.262 ± 0.118	0.279 ± 0.115	0.289 ± 0.130	0.366 ± 0.182
maximum cup depth [mm]	0.679 ± 0.223	0.680 ± 0.210	0.674 ± 0.249	0.720 ± 0.276
cup shape measurement	-0.181 ± 0.092	-0.147 ± 0.098	-0.122 ± 0.095	-0.036 ± 0.096
height variation contour [mm]	0.384 ± 0.087	0.364 ± 0.100	0.330 ± 0.108	0.256 ± 0.090
mean RNFL thickness [mm]	0.244 ± 0.063	0.217 ± 0.076	0.182 ± 0.086	0.130 ± 0.061
RNFL cross sectional area [mm ²]	1.282 ± 0.328	1.155 ± 0.396	0.957 ± 0.440	0.679 ± 0.302

Base: HRT- examination of 743 eyes:

349 with normal visual field

192 with early glaucomatous visual field defect (2–5 dB)

97 with moderate glaucomatous visual field defect (5–10 dB)

105 with advanced glaucomatous visual field defect (>10 dB)

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Corporate Headquarters

Heidelberg Engineering GmbH · Gerhart-Hauptmann-Str. 30 · 69221 Dossenheim · Germany
phone +49-62 21-64 63 0 · fax +49-62 21-64 63 62 · www.HeidelbergEngineering.de

US Office

Heidelberg Engineering, Inc. · 1499 Poinsettia Avenue, Suite 160 · Vista, CA 92083
phone 760-598-3770 · fax 760-598-3060 · www.HeidelbergEngineering.com

Heidelberg Engineering, Inc. · 410 Harris Rd., Smithfield, RI 02917-1301
phone 401-349-0500 · fax 401-349-0504 · www.HeidelbergEngineering.com