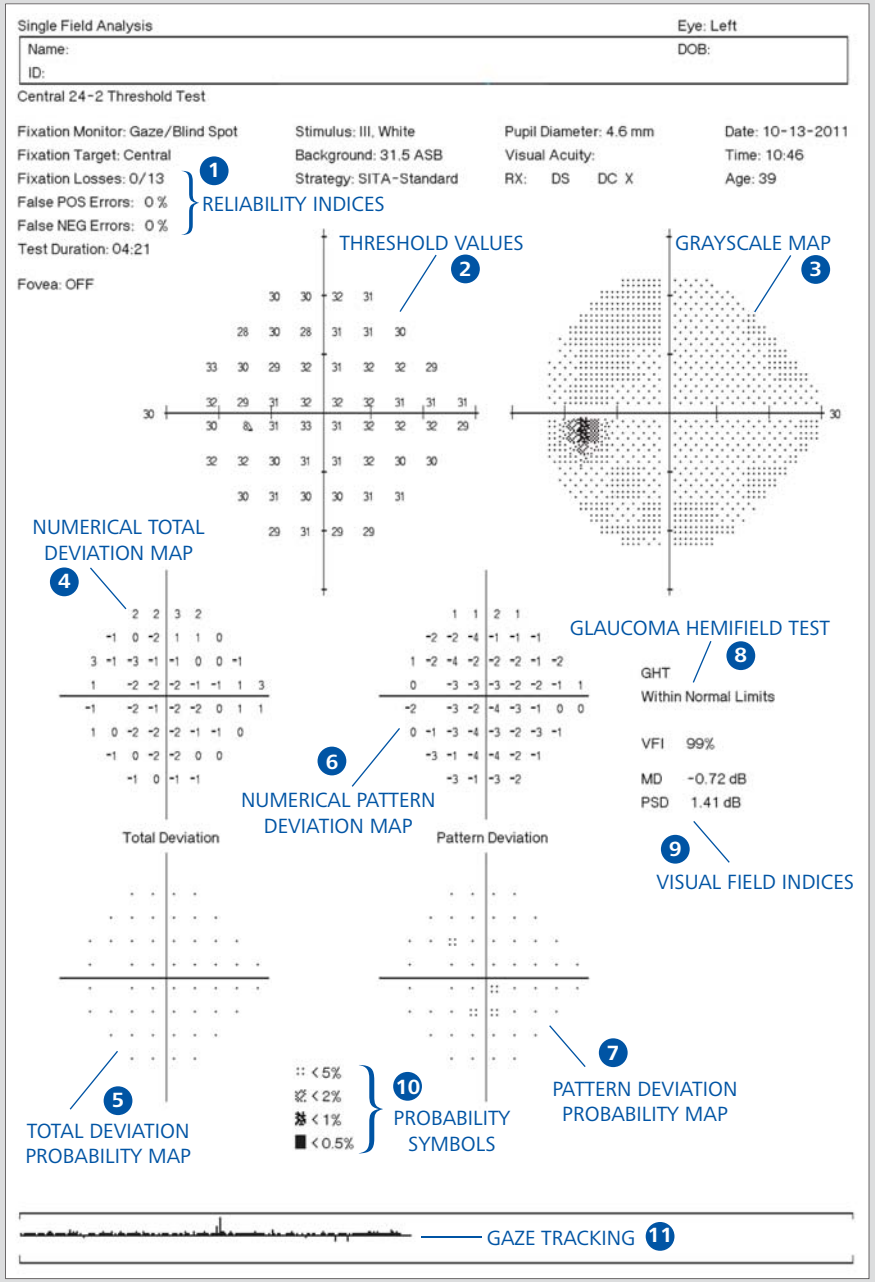
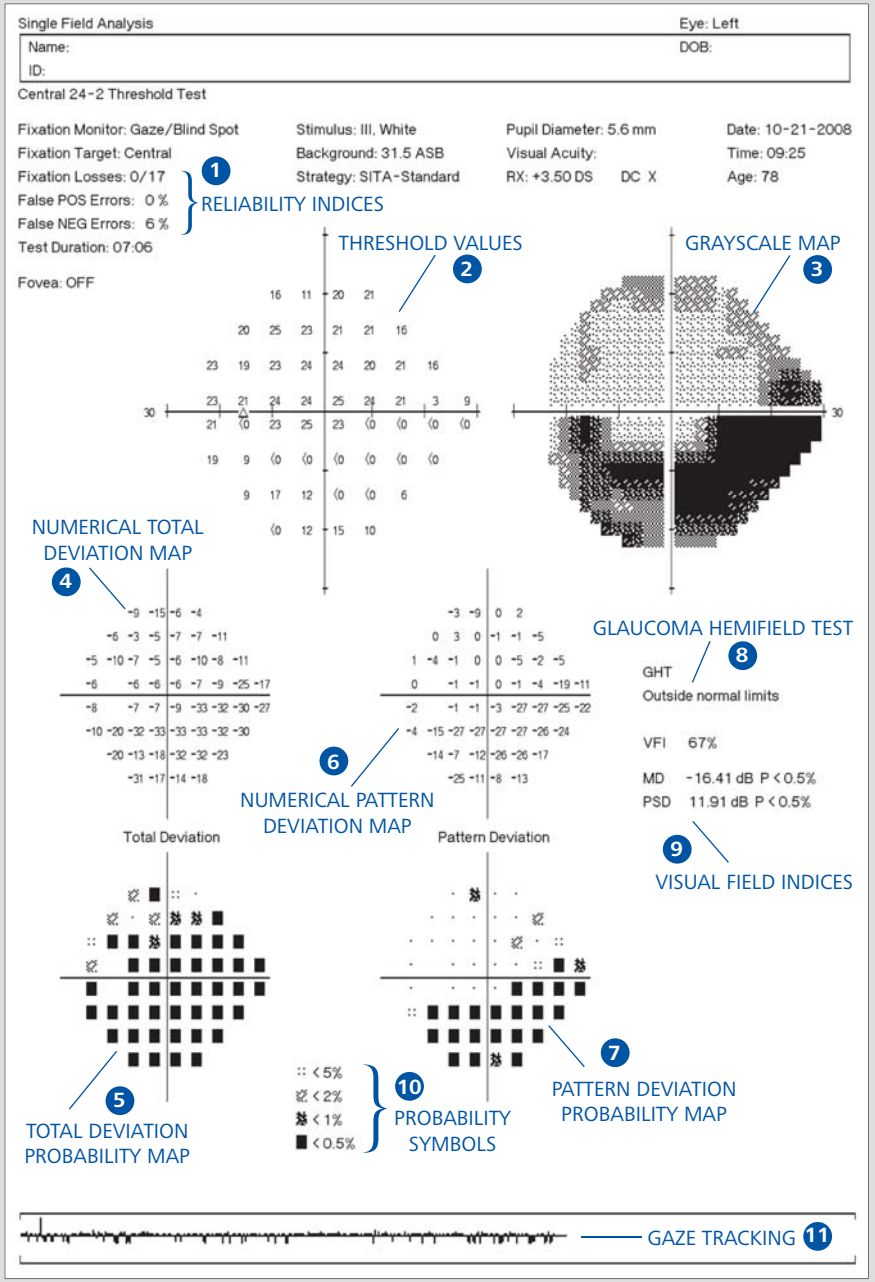
Humphrey® Field Analyzer II-*i* Single Field Analysis

A Guide to Interpretation



SAMPLE CASE 1: 39-year-old patient with normal visual field.



SAMPLE CASE 2: 78-year-old patient with probable glaucomatous field, showing indications of a cataract, and an arcuate scotoma.

A Guide to Interpretation for HFA II-*i* Single Field Analysis

1. RELIABILITY INDICES

Three indices are presented to assist in the evaluation of test reliability.

False Positive Response Errors

The false positive (FP) response error score measures the tendency of patients to press the response button even when no stimulus has actually been seen— in order to identify so-called "trigger-happy" patients. Because FP rates depend strongly upon assessment of patient reaction time over the whole course of the test, the FP rate is not calculated until after testing has been completed. ***The FP index is the most important and useful of the three available reliability indices. We find FP rates exceeding 15% to be strongly associated with compromised test results, and usually it is best to repeat such tests.***

False Negative Errors

False negative (FN) rates are measured by occasionally presenting very bright stimuli at test point locations where threshold sensitivity already has been found to be reasonably normal. ***Note: FN rate estimates are elevated in glaucomatous visual field tests, even in highly attentive patients.***

Fixation Loss Rate

The fixation loss (FL) rate measures patient gaze stability—whether the patient is gazing straight ahead or looking from side to side during the test. FL rates are estimated by periodically presenting stimuli at the presumed location of the patient's blind spot—the Heijl-Krakau method. ***FL rates exceeding 20% may suggest compromised test results.***

2. THRESHOLD VALUES

This presentation simply shows the measured decibel sensitivity at each tested point, and is the basic information upon which all the other analyses and printouts are based.

= HFA tip!

3. GRAYSCALE MAP

The Grayscale Map is an intuitive way of presenting raw decibel sensitivity, with dark areas indicating reduced sensitivity. However, because the data are not compared to normal ranges, significant loss may be unrecognizable. ***Perhaps the most important use of this presentation is in depicting artifactual loss and profound visual field defects.***

TOTAL AND PATTERN DEVIATION MAPS

Be sure to compare the **Total Deviation** and **Pattern Deviation Maps** when evaluating cases. If the two maps look more or less the same, then there is little or no generalized depression (Case 1). On the other hand, a uniformly depressed Total Deviation Map combined with a Pattern Deviation Map showing more localized field loss, probably indicates a cataract (Case 2).

4-5. TOTAL DEVIATION MAPS

The **Numerical Total Deviation Plot (4)** shows decibel deviations from age-corrected, normal sensitivities. The **Total Deviation Probability Map (5)** highlights deviations that fall outside the statistical range of normal sensitivity.

6-7. PATTERN DEVIATION MAPS

The **Pattern Deviation Maps** highlight localized loss after first correcting for any overall change in the height of the hill of vision, such as that caused by cataract. The **Numerical Pattern Deviation Plot (6)** shows decibel deviation while the statistical significance of those deviations is shown in the accompanying **Pattern Deviation Probability Plot (7).** ***The Pattern Deviation Probability Plot may be the single most useful STATPAC™ analysis when glaucoma is suspected.***

8. GLAUCOMA HEMIFIELD TEST (GHT)

The GHT provides a plain language classification of 30-2 and 24-2 test results based upon patterns of loss commonly seen in glaucoma. Pattern Deviation scores in each of five zones in the upper hemifield are compared to findings in mirror-image zones in the inferior visual field. Scoring differences between mirror image zones are compared to normative significance limits specific to each zone pair.

9. VISUAL FIELD INDICES (VFI, MD, and PSD)

Three summary indices of visual field status—VFI, MD, and PSD—appear on the SFA printout.

VFI™ (Visual Field Index™) is a staging index, designed to be less affected by cataract and also to provide improved correspondence to ganglion cell loss compared to MD. VFI is approximately 100% in normal fields and approaches 0% in perimetrically blind fields.

MD (Mean Deviation) shows how much on average the whole field departs from age-normal. MD is primarily used to stage visual field loss and as a metric for rate of change over time.

PSD (Pattern Standard Deviation) reflects irregularities in the field, such as those caused by localized field defects. PSD is small, close to zero, both in normality and in blindness, and peaks at moderate levels of localized field loss; because of this nonlinear behavior, PSD should not be used as a staging or progression index.

10. PROBABILITY SYMBOLS

Probability Symbols are shaded symbols which indicate the statistical significance of each decibel division. The darker the symbol the less likely it is that the field is normal in that location. For instance, a totally black square indicates that the deviation from normal found at that point location occurs in fewer than 0.5% of normal subjects.

< 5%
< 2%
< 1%
< 0.5%

11. GAZE TRACKING

In most Humphrey perimeters, an automatic dual-variable gaze tracker measures gaze direction every time a stimulus is presented. On the gaze tracking record, lines extending upward indicate the amount of gaze error during each stimulus presentation, with full scale indicating gaze errors of 10° or more. Lines extending downward indicate the unsuccessful measurement of gaze direction, for instance, because of a blink.

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