BulbiHUB

Test information

One Device - 14 Tests With 38 Variables For Clinical Research In Ophthalmology And Neurology

bulbitech
Neuro-ophthalmic examinations made easy

Disclaimer:

BulbiCAM is intended for research purposes only and should, by itself, not be used for diagnostic purposes. Results from this device should not be used as the sole basis for any diagnosis, treatment, or medical decision. BulbiCAM and its tests support in diagnostic decision making, a decision that always needs to be taken by a Medical Doctor.

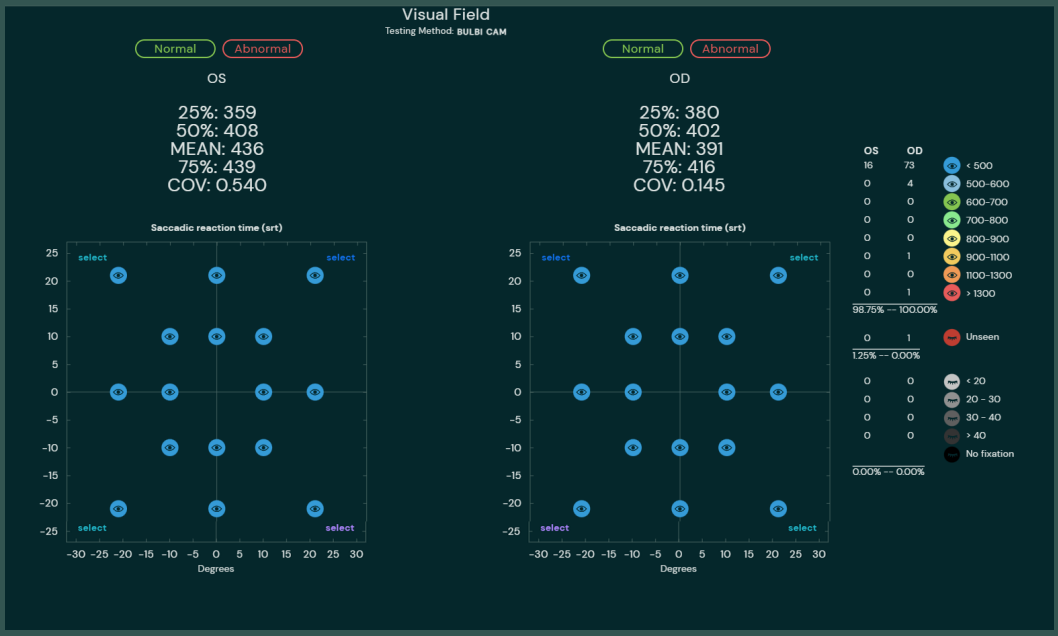
Assessment of visual field.

Both ocular and neurological disorders can lead to monocular or bilateral visual field defects. The intended use is to study effects of visual field defects on saccadic reaction times under various parameter settings, such as stimulus size or brightness.

Method: The visual field test is based on eye tracking and evaluates the eye's ability to detect a peripheral stimulus while fixating on a central point. The test measures the saccadic reaction time, which is the time it takes for the eye to react and reach the peripheral stimulus. The test also includes visual tracing, and the results are presented in the output. The test presents different quantities of points depending on the program used, ranging from 16 to 60 points within 30 degrees of the fixation point.

Synoptic scotoma and motility perimetry

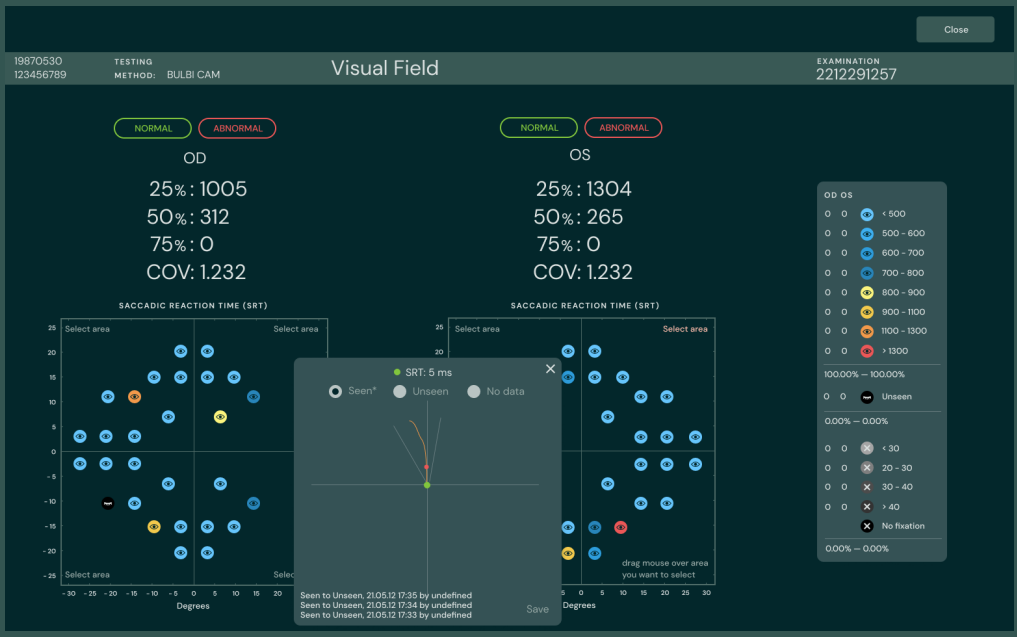
Intended Use: To study the effects of large and/or pseudo defects associated with ocular motility limitations on saccadic reaction times under various settings. Ocular and neurological disorders can lead to ocular motility disorders, which can cause a pseudo visual field defect due to the inability of the eye to move towards the detected peripheral stimuli. The test evaluates 16 positions.



Test Variables	Unit
Seen/Unseen	Seen/unseen/no data
Saccadic Reaction Time	ms
Mean	ms
25%,50%,75% Quartile	ms
Coefficient of Variation	Scalar (0-1)

Express glaucoma perimetry

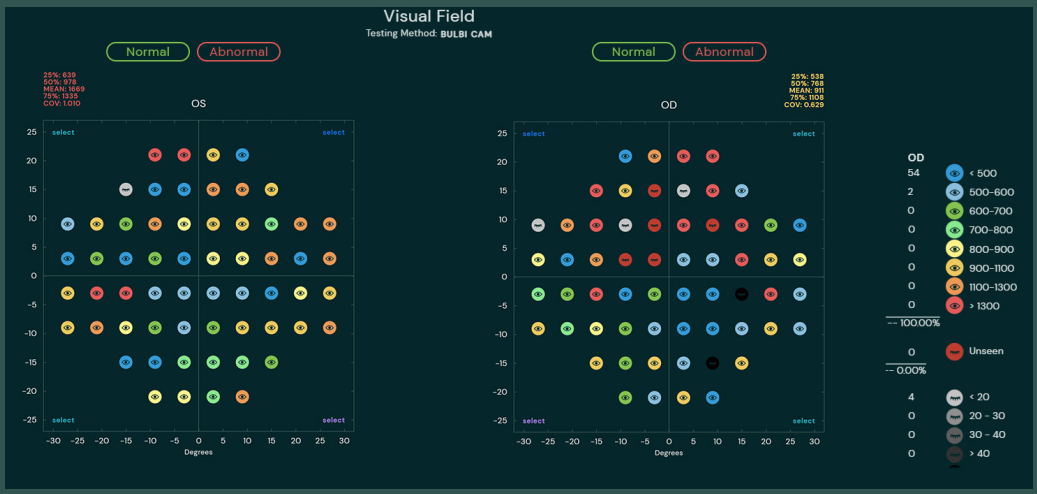
Intended Use: This test measures saccadic reaction times in areas of the visual field that are characteristic for glaucomatous visual field damage, such as superior and/or inferior paracentral and/or nasal defects. It simulates the 24-2 glaucoma screening pattern used in standard automated perimetry and evaluates 26 positions.



Test Variables	Unit
Seen/Unseen	Seen/unseen/no data
Saccadic Reaction Time	ms
Mean	ms
25%,50%,75% Quartile	ms
Coefficient of Variation	Scalar (0-1)

Comprehensive neurological perimetry

Intended Use: Measuring saccadic reaction times in a tightly spaced 60-position pattern can be used to study the effects of neurological disorders, such as lesions along the visual pathways, on delayed reaction times.

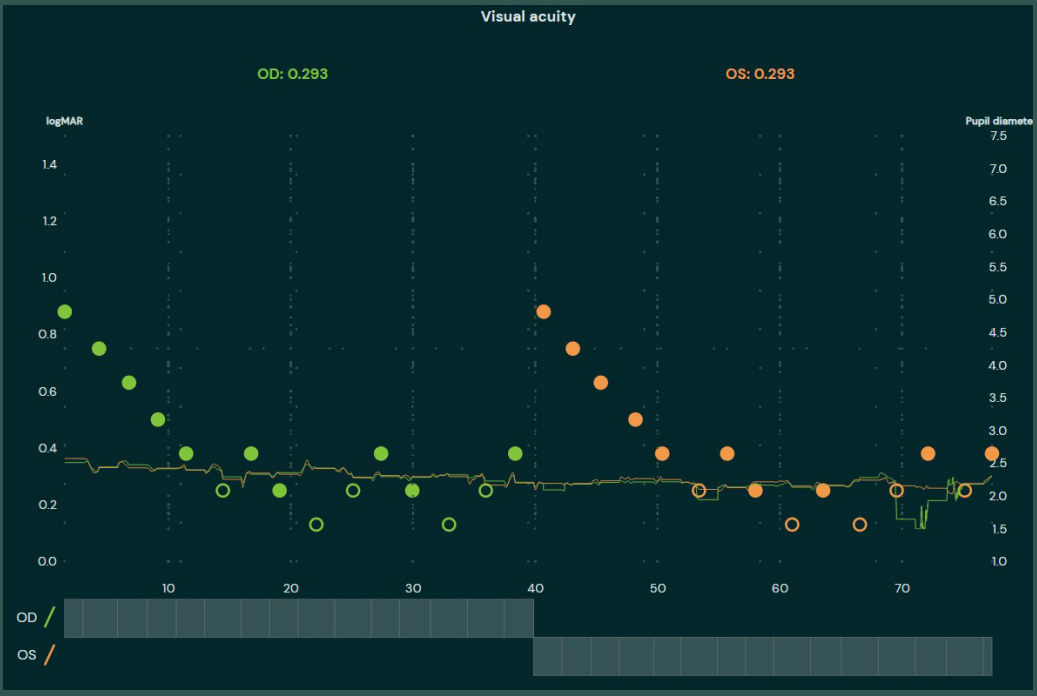


Test Variables	Unit
Seen/Unseen	Seen/unseen/no data
Saccadic Reaction Time	ms
Mean	ms
25%,50%,75% Quartile	ms
Coefficient of Variation	Scalar (0–1)

Objective visual acuity

Method: The best corrected visual acuity test aims to evaluate the eye's ability to visualize and track a high-contrast moving stimulus that is gradually being reduced in size. The established thresholds achieved by the subject are then quantified and the measurements are represented in logMAR.

Intended Use: Determine the best achieved visual acuity values under best refractive conditions for the eye. Different pathologies, both ocular and neurological, can cause a decrease in visual acuity.

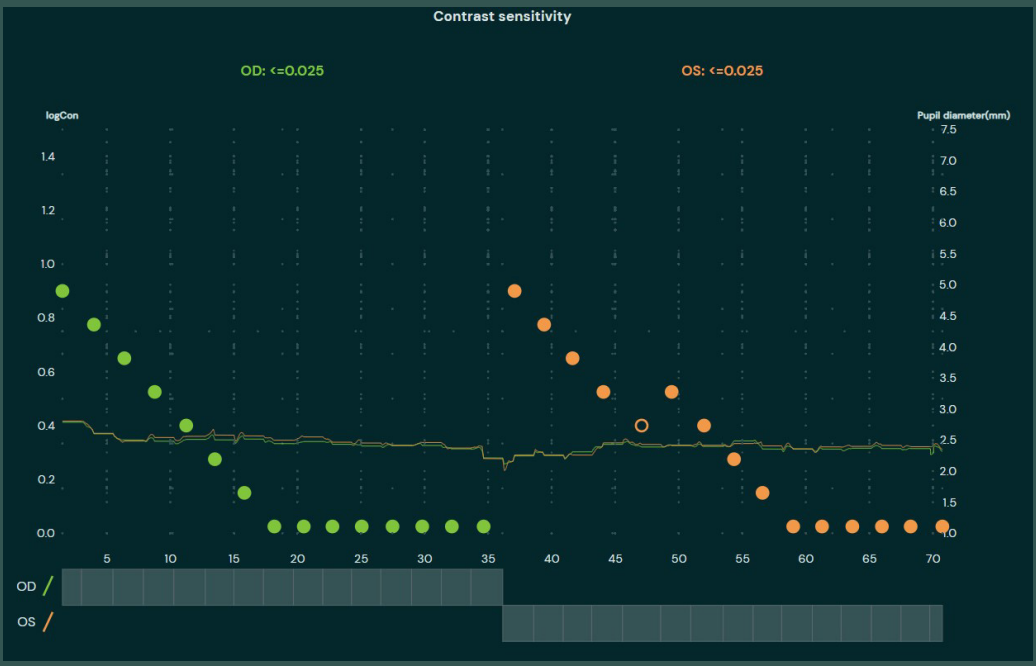


Test Variables	Unit
Visual Acuity	LogMAR

Objective contrast sensitivity

Method: The contrast sensitivity test evaluates the eye's ability to visualize and track a high contrast moving stimulus that is gradually being reduced in contrast levels and size. The established thresholds achieved by the subject are then quantified and the measurements are represented in logCon.

Intended Use: Determine the best achieved contrast sensitivity values under best refractive conditions for the eye and to study how certain pathologies of the retina affect the contrast sensitivity.

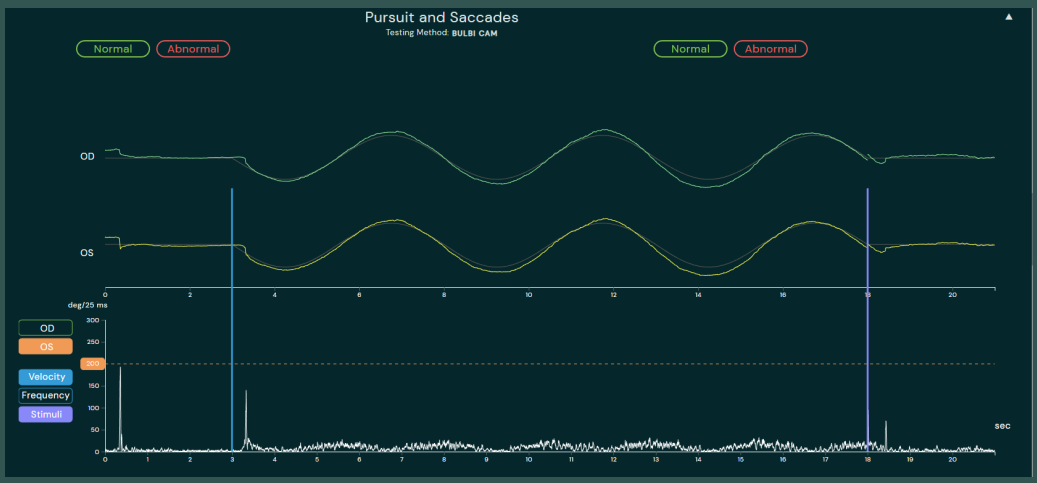


Test Variables	Unit
Contrast sensitivity	logCon

Automated smooth pursuit metrics

Method: The smooth pursuit test evaluates the eye's ability to accurately track a visual target in a smooth controlled manner. The gain (%) variable, an expression of how close the eye is following the moving target, is measured.

Intended Use: Assessment of smooth eye pursuit capabilities. In some neurodegenerative disorders the eye might have reduced abilities to smoothly follow a target and tends to do catch-up saccades. The intended use is to detect and quantify eye pursuit dynamics.



Test Variables	Unit
Gain (Velocity target/eye)	%
Timeshift	Second
Phaseshift	Second

Fast macular light adaptation metrics

Method: The macular light adaptation test aims to evaluate the central part of the retina's adaptive mechanisms by showing the eye a moving stimulus in darkened conditions while periodically exposing the eye to a source of light with fixed or variable frequency. The highest threshold achieved by the eye while maintaining visibility of the stimulus is then quantified and the measurements are represented in logCon or Hz.

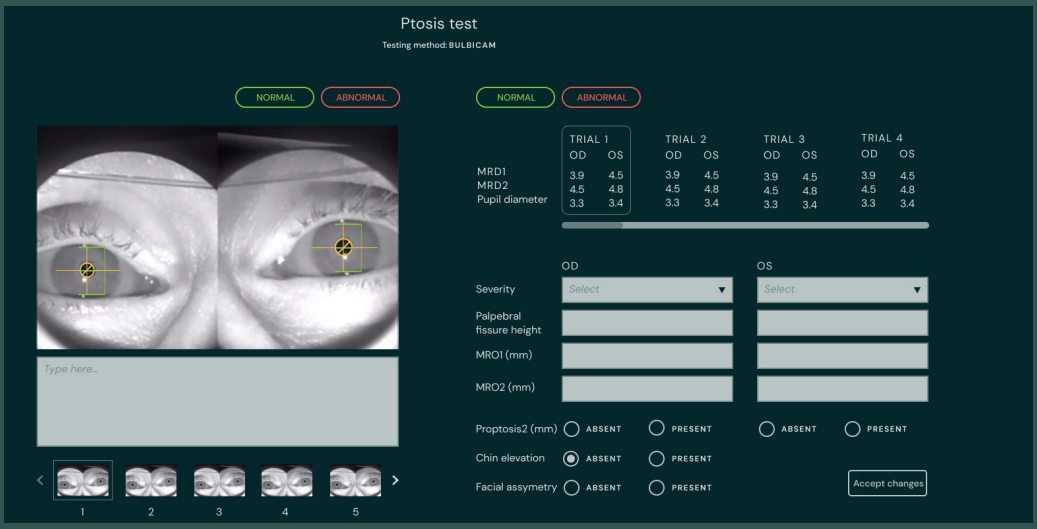
Intended Use: To study the light-adaptive capability of the photoreceptors and retinal neurons in the foveal area, the central part of the retina. Certain retinal disorders can affect the central retinal area with or without involvement of the fovea that is responsible for main vision.

Test Variables	Unit
Fixed contrast	Hz
Fixed frequency	logCon

Ptosis grading module

Method: The ptosis test takes images of both eyes then quantifies the position of both upper and lower eyelids in relation to the cornea and pupil. The distance between the edges of the eyelids and the center of the pupil alongside with pupil diameters are measured.

Intended Use: Assessment of eyelids position in relation to the center of the eye and pupil diameter measurement. Ocular, neurological, endocrinological and other types of disorders can lead to malpositioning of one or both eyelids and/or asymmetry in pupils.

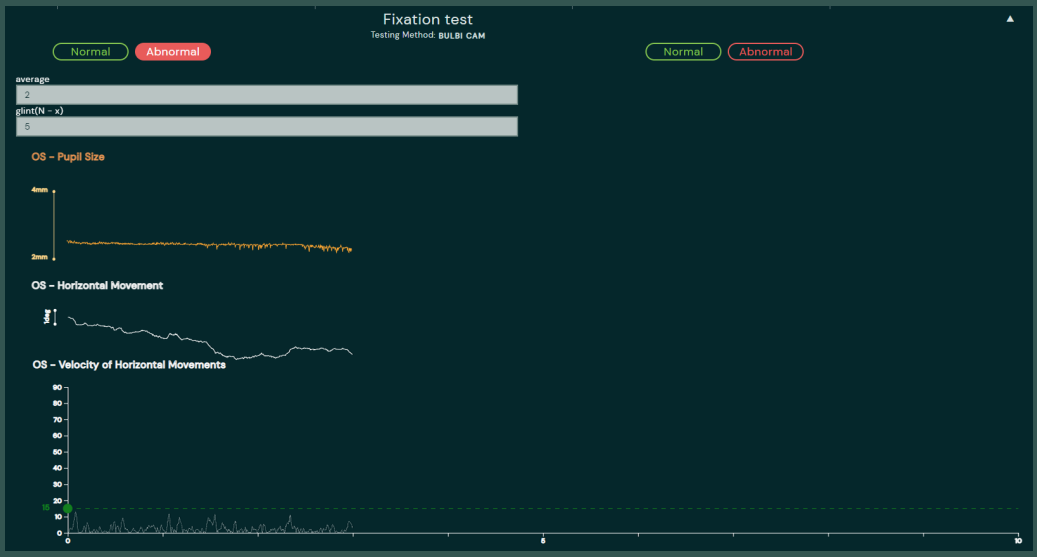


Test Variables	Unit
MRD1	mm
MRD2	mm
Pupil size	mm

Automated fixation metrics

Method: The fixation test measures the fixation capabilities of an eye towards a stationary target before the occurrence of intrusive saccades, if any.
The test measures the span and peak velocity of eye movements in degrees."

Intended Use: Assessment of eye fixation capabilities. In some neurodegenerative disorders, the ability of an eye to fixate on an object is affected. The intended use is to detect and quantify fixation deviations.

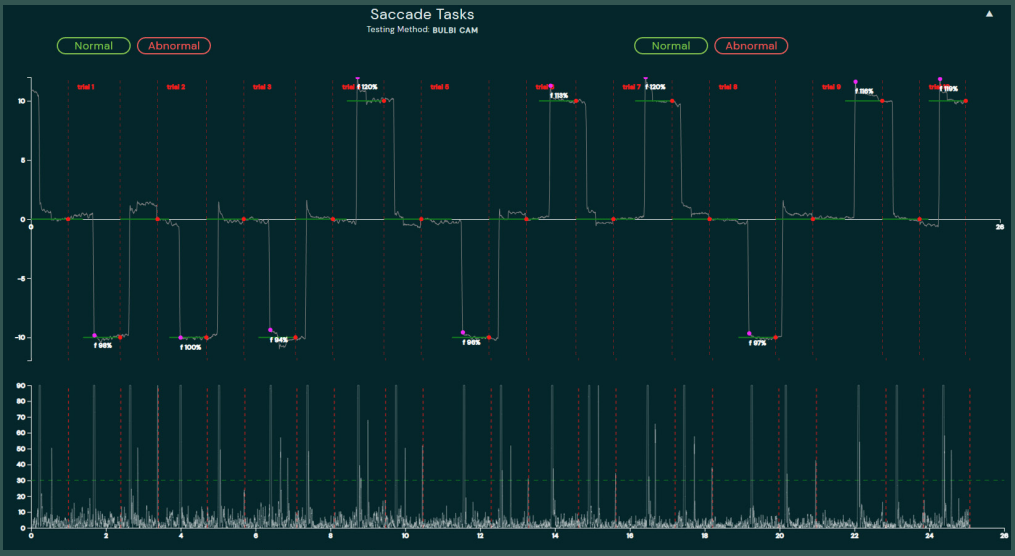


Test Variables	Unit	Unit	Unit
Stability	mm	Pupil mean diameter	mm
Duration	ms	Pupil max	mm
Fixations/min	Number/min	Pupil min	mm
Saccade amplitude	Degree		

Pro-saccade metrics

Method: The pro-saccade test aims to measure the saccadic latency, accuracy and peak velocity of fast eye movement, both short and long.

Intended Use: Assessment of saccadic eye movements. The intended use is to measure the values of fast eye movements. Saccade abnormalities are present in certain neurodegenerative disorders.



Test Variables	Unit
Latency	ms
Accuracy	%
Peak velocity	Degree/sec

Anti-saccade metrics

Method: The anti-saccade test aims to measure the latency, accuracy and peak velocity of fast eye movement, both short and long by evaluating the gaze shift in the opposite direction from a presented target.

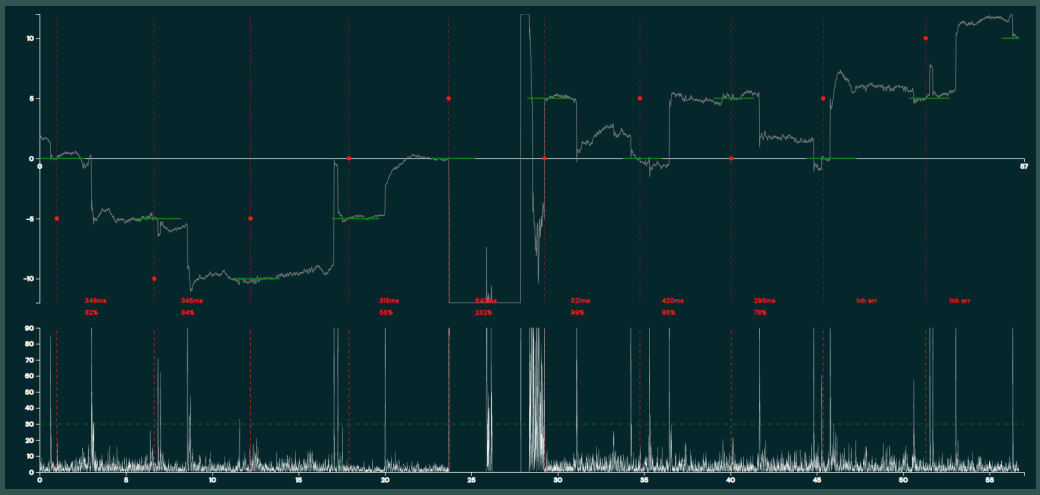
Intended Use: Assessment of anti-saccades. The intended use is to study the test subject's ability to inhibit reflexive saccades.
Certain neurodegenerative disorders may cause a decrease in the ability to adequately control eye movement.

Test Variables	Unit
Latency	ms
Amplitude	Degree
Peak velocity	Degree/sec
Number of gaze errors	Quantity

Memory saccade metrics

Method: The memory-saccade test aims to test subject's transsaccadic memory by presenting a stimulus at a certain position, and then measuring the test subject's capability to return to the same position after it disappears. Latency and accuracy of the gaze shift are measured.

Intended Use: Study of memory guided saccades. The intended use is to appreciate the test subject's capability of short-term visual memory. Certain neurodegenerative conditions can affect short-term visual memory.



Test Variables	Unit
Latency	ms
Accuracy	%
Number of gaze errors	Quantity

Swift nystagmus evaluation

Method: The nystagmography test is a video-based oculography method that measures involuntary eye movements in 9 cardinal directions at near (40 cm) and far (6 m) distances. The output displays eye movement amplitude, frequency and characteristics.

Intended Use: Study of nystagmus. The intended use is to video-record, detect, characterize and quantify involuntary eye movements. Certain ocular and neurological conditions lead to nystagmus.

Test Variables	Unit
Frequency	Hz
Amplitude	Degree
Axis	Degree

Dynamic pupillometry

Method: The pupil test evaluates pupil light responses in the form of changes in its diameter by exposing each eye to different screen brightnesses synchronously. Measurement output displays pupil diameters, pupil latency and peak velocity under various light conditions.

Intended Use: Assessment of pupillary light response. The intended use is to appreciate pupillary light responses and study their relationship to RAPD. Certain ocular and neurological disorders can cause monocular or bilateral pupillary defects in the form of response inadequacy.

Test Variables	Unit
Diameter min/max	mm
Peak velocity	mm/s
Latency	ms

bulbitech

Neuro-ophthalmic examinations made easy

+47 73 49 48 87

contact@bulbitech.com

www.bulbitech.com

DM 29 Brochure HUB rev.1.0 20230216