For multifocal VEP exams, the visual stimulation is made of checkerboards including each a matrix of 4 x 4 elements (8 black and 8 white).

Stimulation can be of two different types: pattern reversal (black elements are replaced by white elements and vice versa) and pulsed pattern (the checkerboard element is replaced by a uniform grey background of equal average luminance).

Stimulations cover a visual field of 40 degrees and differ by the number of zones (5, 17, 35, and 61) and by the type of stimulation (pattern reversal or pattern pulsed).

<table>
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<th>Stimulator</th>
<th>Recommended options</th>
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<td>Universal stimulator MonPack</td>
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<td>4 channels bioelectric amplifiers HVM-AM4</td>
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<td>Set of large field correction lenses HVM-OPTI</td>
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<td>Automated fixation monitoring PVM-CF</td>
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</table>

Recording the VEP responses with 4 simultaneous channels is recommended in order to minimize the effect of responses inhomogeneity as a function of the electrode position.

**Map of local responses**

The program automatically determines, for each stimulated area, which channels provides the “best” response (estimated from the signal to noise ratio).

After combining the results from the 4 recorded channels, the program calculates a map of local responses.
2D and 3D response density maps

The program calculates the 2D and 3D interpolated maps based on the RMS values of local responses.

Zone analysis

The zone analysis allows the comparison of the average of responses within given zones. Responses can be grouped by rings (as a function of eccentricity relative to the fovea) or by quadrants or by zones defined by the operator.

The example hereby shows the result of an analysis performed over quadrants when the right half of the stimulation screen is masked.

Optical correction

An accurate correction of refractive errors is important to obtain results of “good” quality.

Metrovision recommends the use of its set of “large field” eye glasses (55 mm in diameter) which avoid masking artifacts of the peripheral visual field.

Control of fixation and attention

The patient’s attention and fixation are stimulated by the presentation in the center of the fixation area of a small pattern which changes orientation in a pseudo random way.

The patient is asked to press a button every time the pattern orientation changes.

The high resolution video camera also allows an accurate control of fixation by the operator.

As an option, Metrovision proposes an automated fixation control which uses the image of the eye to automatically measure in real time the eye movements and pupil size and reject the responses in case of movement or eye blink.