Glance Optical Pty. Ltd.

MRF Suite

Instruction Manual

MRF Online

mrf melbourne rapid fields

Contents

1. Introduction (Device description and Intended use)

The Melbourne Rapid Fields (MRF) Online Perimeter is a software medical device that functions as a visual field plotter. It presents controlled visual stimuli on a calibrated electronic display and records patient responses to determine pointwise sensitivity and overall visual field status. The device operates through a standard web browser without the need for dedicated hardware, and incorporates AI-enabled webcam assessment to monitor gaze stability and viewing distance to promote test validity. The primary output is a visual field report displaying numerical and graphical representations of visual function, analogous to those produced by conventional perimeter devices.

1.1 Intended use

MRF is a software application to be used in clinics or at home to test the visual field patient's currently undertaking treatment for chronic conditions that affect the visual field. The MRF device is used in conjunction with current/existing practices by providing an additional monitoring tool, that gives the user a risk assessment and advice in relation to seeing their eye care specialist. It is not intended to make a specific diagnosis; it provides test outcomes that a specialist can use to form a diagnosis.

The MRF device for home test is intended for use with patient's already diagnosed with chronic conditions affecting the visual field, such as glaucoma, macular degeneration, diabetic retinopathy or neurological conditions.

1.2 Intended Purpose

The Melbourne Rapid Fields (MRF) device is a software-based visual field test intended to assess and monitor visual function in individuals with conditions known to affect the visual field. It is designed to be used in conjunction with existing clinical practice as an additional in-clinic or remote testing tool, supporting both initial assessment and ongoing monitoring of visual function.

MRF may be used by:

- Eye-care professionals (ophthalmologists, optometrists) in clinical settings to assess visual field defects and monitor disease progression.
- Patients with diagnosed chronic eye or neurological conditions that affect visual field for remote/home-based testing, with results available to their treating clinician to support management decisions.

The device provides quantitative measures of visual sensitivity and maps of the visual field, enabling the clinician to detect and monitor visual field loss. Patients with chronic eye diseases that affect visual field, such as glaucoma, age-related macular degeneration,

diabetic retinopathy, or neurological conditions (e.g., stroke, optic neuropathy), may benefit from interim home monitoring between scheduled clinic visits. Where persistent changes are detected, MRF advises the patient to seek review with their eye-care specialist.
MRF is not intended to provide a medical diagnosis. It provides information to support the clinician's overall assessment and management plan.

1.3 Indications

The device is indicated for assessment of visual field defects in patients with conditions that may impair visual function, including but not limited to:

- **Glaucoma** – typically assessed using the 24-2 (24° vertical × 30° horizontal from fixation) or 30-2 (30° × 30°) test protocols. In advanced glaucoma, the 10-2 protocol (10° × 10° central field) may be used to evaluate central visual loss.
- **Macular degeneration** – typically assessed using the 10-2 protocol to evaluate central visual field impairment.
- **Neurological conditions** (e.g., stroke, optic pathway lesions) – typically assessed using the 24-2 or 30-2 protocols to evaluate hemianopic or quadrantanopic field defects.
- **Diabetic retinopathy** – assessed using the 24-2 protocol for peripheral field changes and the 10-2 protocol to evaluate central fixation loss.

List of Test Module Variants

Test Protocol	Field Area Assessed	Stimulus Parameters	Typical Clinical Use / Indication
MRF 24-2 Threshold	**24° vertically × 30° horizontally from fixation**	**Static threshold stimuli**	**Standard visual field testing; used commonly in glaucoma, neurological disease affecting central and peripheral field; diabetic retinopathy (peripheral field defects)**
MRF 30-2 Threshold	**30° vertically × 30° horizontally from fixation**	**Static threshold stimuli**	**Extended glaucoma assessment; neurological field defects (e.g., hemianopia, quadrantanopia)**
MRF 10-2 Threshold	**Central 10° × 10°**	**Static threshold stimuli**	**Advanced glaucoma (central loss); macular disease (e.g., age-related macular degeneration); diabetic macular involvement**

Test Protocol	Field Area Assessed	Stimulus Parameters	Typical Clinical Use / Indication
MRF Binocular Suprathreshold Screening	**Central 20 ° x 120 °**	**Suprathreshold stimuli at set dB level above age-corrected normal**	**Binocular functional screening in community**
MRF Radial pattern test	**24° vertically × 30° horizontally from fixation**	**Static threshold stimuli**	**Legacy test pattern used prior to 2020 on MRF iPad app. Not marketed in EU/UK. This test pattern is discontinued.**

1.4 Intended patient population

The device is intended for adults (≥18 years) undergoing assessment of visual field loss due to ocular or neurological disease. Use in pediatric populations may be undertaken under clinician supervision, where the child is judged capable of performing the test reliably. The device may be used across disease stages provided that measurable thresholds can be obtained within the luminance range of the display system.

1.5 Intended users

The device is intended for use by trained eye-care professionals, including ophthalmologists, optometrists, and clinical researchers, in both clinical practice settings. When configured for home-monitoring, the device may be used by patients under the supervision and direction of their clinician. The results are interpreted by the eye-care professional. It is not intended for self-diagnosis of disease by patients.

1.6 Contraindications, warnings, and precautions

- Contraindicated in individuals unable to maintain fixation or understand test instructions (e.g., severe cognitive impairment, significant tremor).
- Results may be influenced by poor environmental conditions (e.g., glare, excessive lighting, distractions).
- Results should be interpreted only by a qualified clinician, with consideration of reliability indices and test conditions.
- Test results should always be interpreted in conjunction with a comprehensive clinical examination. The device is not intended for standalone diagnosis of any disease.
- The stimulus intensity displayed by MRF Online is calibrated to remain well within internationally accepted ophthalmic safety standards (ISO 15004-2).
  Stimuli are presented for very short durations (<300 ms) and are non-hazardous.
  Clinicians should advise patients to discontinue testing if they experience discomfort and report symptoms through PMS channels.

- Testing visual field at home does not replace regular clinic visits. Eye care provider should continue to encourage patient to follow the advice of standard regular clinical review, even when testing performed at home.

1.7 AI Webcam Function

The MRF Online system uses an AI/ML module (FaceAPI.js built on TensorFlow.js) to analyse process live webcam images. This allows the system to assess:

- **Viewing distance:** continuously monitoring whether the patient remains within the correct range.
- **Gaze stability:** recording fixation stability and generating a gaze stability chart.
- **Eye coverage:** confirming correct eye occlusion.
- **Background environment:** identifying excessive light or clusters of light that may interfere with testing.

All processing occurs **locally within the user's web browser**. No facial images or video data are stored, transmitted, or used for retraining.
The AI webcam function operates solely to improve testing accuracy and comfort; it does not make diagnostic decisions or identify individuals.

1.8 Clinical Performance and Safety of MRF Perimeter

Clinical Performance and Safety of the MRF Perimeter

The Melbourne Rapid Fields (MRF) Online Perimeter has undergone extensive clinical validation in both pre-market and post-market settings to demonstrate its safety, reliability, and diagnostic performance for visual field assessment in glaucoma and other optic nerve or neurological diseases.

Clinical Performance

Since CE and MHRA registration, several independent and multicentre studies have confirmed that the browser-based MRF Online Perimeter provides visual field results equivalent in accuracy and repeatability to the Humphrey Field Analyzer (HFA), the accepted State-of-the-Art benchmark:

- Harris et al., 2022 (Optom Vis Sci 99(4):372-82) evaluated MRF test procedure characteristics, confirming consistent threshold precision and test-retest repeatability comparable to HFA SITA strategies.
- Kang et al., 2023 (Ophthalmology Glaucoma) compared MRF, Smart VFA, and HFA across clinical glaucoma cohorts, demonstrating high correlation ($r > 0.9$) and comparable diagnostic sensitivity/specificity.

- Freeman et al., 2023 (J Glaucoma 32:948-953) assessed participant experience across novel perimeters and reported the MRF as the most comfortable and user-friendly due to its short test duration and intuitive interface.
- Tiang et al., 2025 (Front Ophthalmol) performed a multicentre comparison of browser-based MRF vs HFA SITA-Faster, confirming mean deviation (MD) agreement within ±1.3 dB and intraclass correlation ≥ 0.92 across 150 patients.
- Chen et al., 2025 (TVST) validated MRF in Chinese glaucoma patients, showing strong concordance with HFA outcomes across mild, moderate, and severe disease stages.
- Sugihara et al., 2025 (TVST; J Glaucoma) performed comparative analyses for 10-2, 24-2, and 30-2 test patterns, demonstrating excellent structure–function correlation and test–retest reproducibility (ICC > 0.9).
- Kong et al., 2025 (Front Ophthalmol) reported results from the MRF Home Visual Field Study, showing high patient compliance (≥ 90%) and strong correlation between home and clinic tests.

- Prea et al., 2025 validated the binocular field (Esterman) function of MRF against simulated HFA testing in normal subjects, showing comparable global indices (MD, VFI) and fixation stability.

Across all studies, MRF demonstrated test durations between 2–4 minutes per eye, strong reproducibility (ICC ≥ 0.85), and diagnostic agreement within ±3 dB of HFA results.

Safety

MRF is a software-only, non-contact diagnostic application that meets ISO 15004-2 safety standards for ophthalmic instruments.
Stimuli are low-luminance white-light flashes (< 10 cd/m²) and present no risk of retinal phototoxicity.
No device-related adverse events have been reported across more than 500 tests in clinic and home settings.
The AI-enabled webcam gaze-tracking module uses a standard RGB camera to monitor fixation and viewing distance.
All images are processed locally on the user's device—no images or video data are transmitted or stored externally.
Only non-identifiable numerical gaze metrics are used for analysis, ensuring full compliance with data-protection and privacy requirements (GDPR / APP / ISO 27001).
The module employs passive computer-vision algorithms and emits no infrared or hazardous light.
Testing is fully non-invasive; potential user discomfort is limited to transient visual fatigue or attention lapse.
The device's built-in quality controls (fixation monitoring, ambient-light detection, and AI-based test validation) further safeguard patient safety and data integrity.

Clinical Conclusion

The accumulated clinical data, including multiple independent and peer-reviewed post-market studies, confirm that the MRF Online Perimeter is a safe, accurate, and patient-friendly alternative to conventional bowl perimetry.
Its diagnostic performance aligns with State-of-the-Art standards, supporting its clinical use for glaucoma detection, monitoring, and telehealth-based visual field assessment.

2. A message from the creators of MRF

The Melbourne Rapid Fields (MRF) Online is a web application which is the future of practicing optometry. Vision testing can be performed on any device with broadband connection and an internet browser as long as the screen is larger than 9.7" (diagonal). It has all the advantages of the MRF iOS software with the additional benefit of telehealth and Esterman fields, if you have a large screen.
Our mission is to design products that help to preserve vision by being:

1. Clinically validated, portable and cheap.
2. Suitable for patients to monitor their own vision at home.
3. Suitable for doctors, optometrists, and general practitioners to perform ALL aspects of vision evaluation.

In creating these products, we have used the most contemporary test methods that incorporate modern knowledge of vision processing to give you a reliable test of vision that we hope is easy to use for you and your patients. We thank you for joining us on this unique and novel journey and we look forward to any feedback that you might have on our products.

A/Prof George Kong
(Glaucoma specialist and IT expert)

Prof Algis Vingrys
(Professor in clinical optometry)

3. The Glance Optical website

The Glance Optical website is the home of MRF Online and can be accessed by navigating to the following web address; www.visiondata.net.au or www.visioninhome.au (Australia), www.visioninhome.uk (UK and EU), www.visioninhome.com (International). All vision testing is conducted via the MRF/Glance Optical website which requires the user to log into their account (Section 3.1. Creating a new user account) using a compatible device (Section 2.1. Compatible hardware and software).

Basic UDI-DI: ++G583MRFONLINEEU2VJ
UDI-PI: +G583MRFONLINEEU2VJ/01SW2.48

3.1 Compatible hardware and software

The following hardware is required for the use of MRF:

- PC running windows 10 or Mac running OSx 10 or newer
- Laptop screen or external monitor*
- Internet connection
- Web browser
    - Google Chrome
    - Microsoft Edge
    - Mozilla Firefox
    - Safari
- Keyboard
- Mouse
- Speakers
- Optional: Integrated Web cam

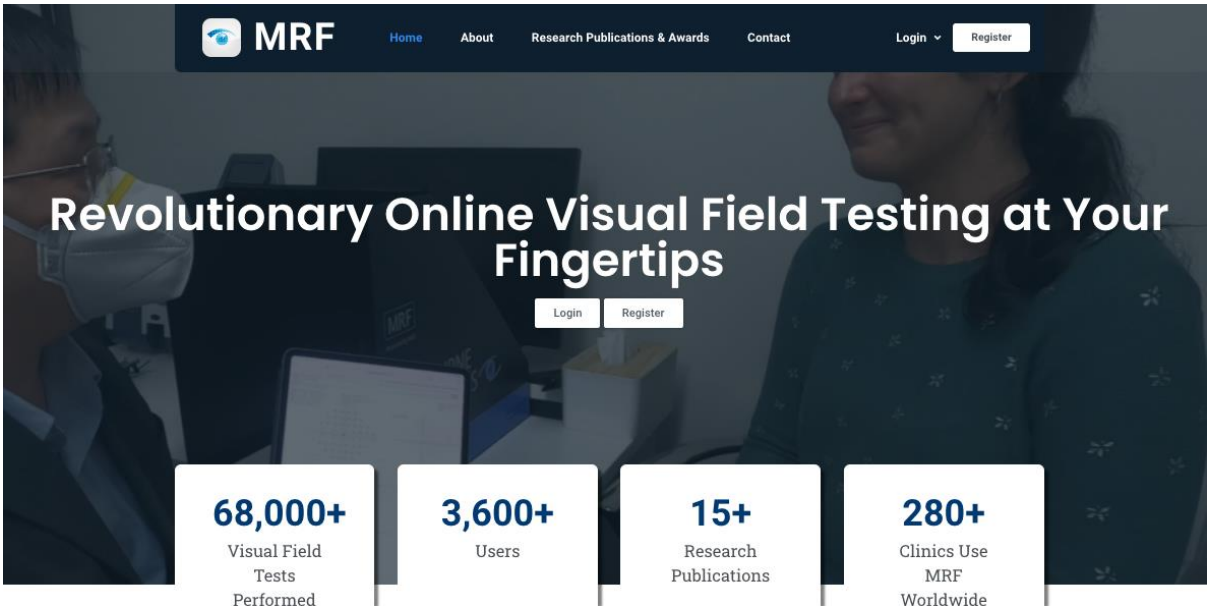
*Note that the binocular Esterman (Equiv.) visual field test requires a screen with minimum diameter of 27". Visual field testing require screen brightness of 300 nit or more. Visual acuity testing requires a minimum screen resolution of 4K or UHD (3840 x 2160 pixels).

4. Creating a new user account and logging in

4.1 Creating a new user account

To set up a new user account, do the following:

1. Navigate to www.visioninhome.au (Australia), www.visioninhome.uk (EU/UK), www.visioninhome.com (International) on web browser.



2. Click on Register button

3. Complete all fields in Figure 1. Note that fields marked with * are required.

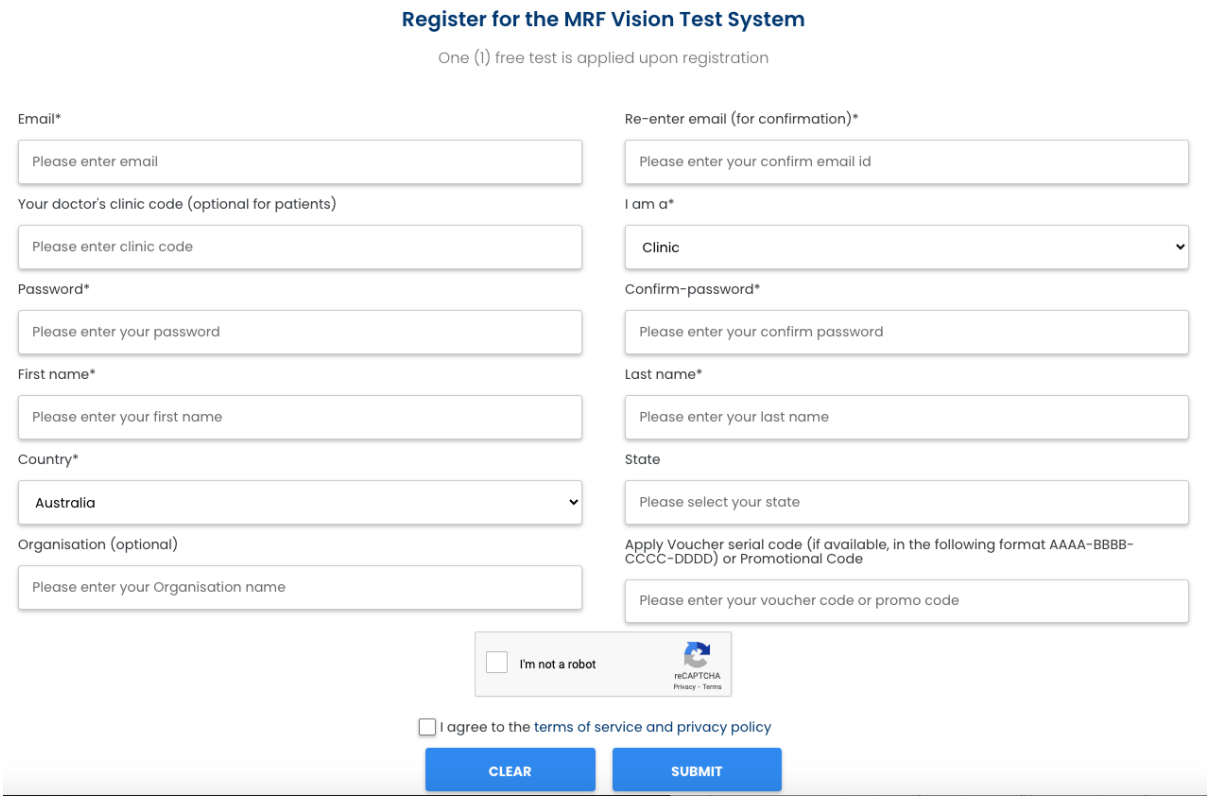


Figure 1. Signup screen for an MRF Online account

4. Click terms of service and privacy policy to read the conditions of use
5. Agree to the terms of service and privacy policy by ticking the check box
6. Click Submit . You will receive an email notification when your account has been successfully created.

   Click Clear to clear your responses and start again

4.2 Logging in to your account

To log into your MRF Online account, do the following:

1. Navigate to www.visioninhome.au (Australia), www.visioninhome.uk (EU/UK), www.visioninhome.com (International) on web browser.
2. Click on Login button at the home page.
3. Enter your email address and password

4. Click on Login Button

Alternatively, the user may click Forgot password? to set a new password.

4.3 Logging out of your account

At the completion of a testing session, the user should log out of their account. To log out, do the following:

1. Click on **Logout** at the top Right hand Menu of the screen (Figure 1 i.)

5. The home screen

The user is greeted by the home screen when the log into their MRF Online account.

5.1 Elements of the home screen

Figure 2 shows the elements of home screen:

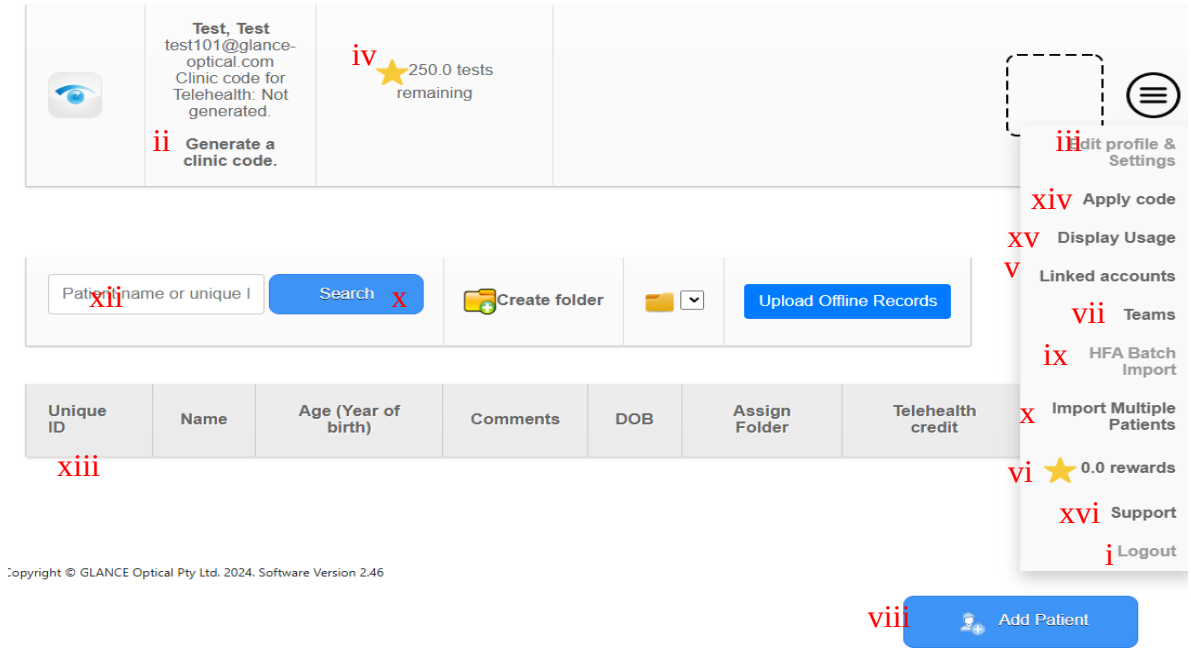


Figure 2. Elements of the home screen.

Each element is discussed in further detail below:

i. **Logout:** Log out of MRF Online

ii. **Generate doctor code:** Allows the user to generate a doctor code which can be used by patients to link their accounts (see section 4.2)

iii. **Edit profile:** Change your name, organisation name or password (see section 4.3)

iv. **Remaining tests:** The number of tests available to the user is displayed here. Note that 1.0 MRF tests allows for a single test of the right and left eyes

v. **Linked patients:** Displays patients linked to the user's account via the doctor code (see section 4.4)

vi. **MRF stars collected:** Displays the number of stars collected by the user by reviewing the results of linked patients

vii. **Team members:** Allows the user to nominate team members by entering their email address. Team members will be able to receive progression notifications from patients and be able to view patient data (see section 4.5).

viii. **Add patient:** Add a new patient to the Patient List (see section 4.6)

ix. **Import HFA Batch:** Allow import of a large batch of Humphrey Field Analyzer visual fields stored in zip files with each patient in dividual directories within the zip file.

x. **Import multiple patients:** Feature to be added in future release.

xi. **Create folder:** Allows the user to create a folder to organise patient data (see section 4.7)

xii. **Search:** Allows the user to search for a patient by entering the name or ID

xiii. **Patient list:** Displays all patients added to MRF Online

xiv. **Apply Code:** Access page to Apply voucher codes

xv. **Display Usage:** Display most recent usage of test credits on the current user account.

xvi. **Support:** Display contact information of support available for different geographical locations.

5.2 Generate doctor code

The user can generate a doctor code which can be shared with patients who intend to home-monitor their vision with MRF. Once the patient becomes a Linked Patient, their home test results can be reviewed (see section 4.4 Linked patients).
To generate a doctor code, do the following:

1. Click on **Generate a doctor code**

2. Your doctor code will be generated (see example in Figure 3)

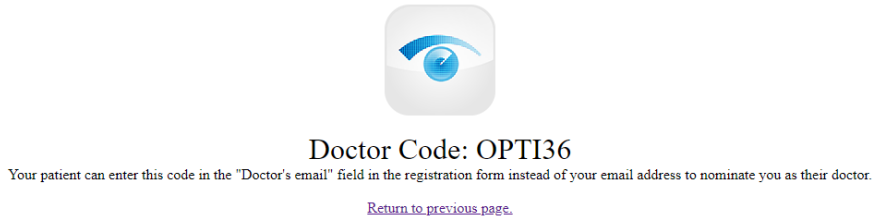


Figure 3. A new doctor code has been generated.

3. Click Return to previous page

4. The user's doctor code is now displayed in the upper left corner of the home screen

5.3 Edit Profile & Settings

The user may change their name, organisation name or password in the **Edit profile & Settings** section. You can also upload a logo image for your clinic, set Default language for Voice guidance during MRF testing, setup Two Step authentication, and to setup whether to use front facing camera to monitor viewing distance, option to hide test results for patients on telehealth, and to select test modules to display in the Modular MRF vision test screen. To edit your profile & settings, do the following:

1. Click on **Edit profile & Settings**

   The following screen will appear (Figure 4).

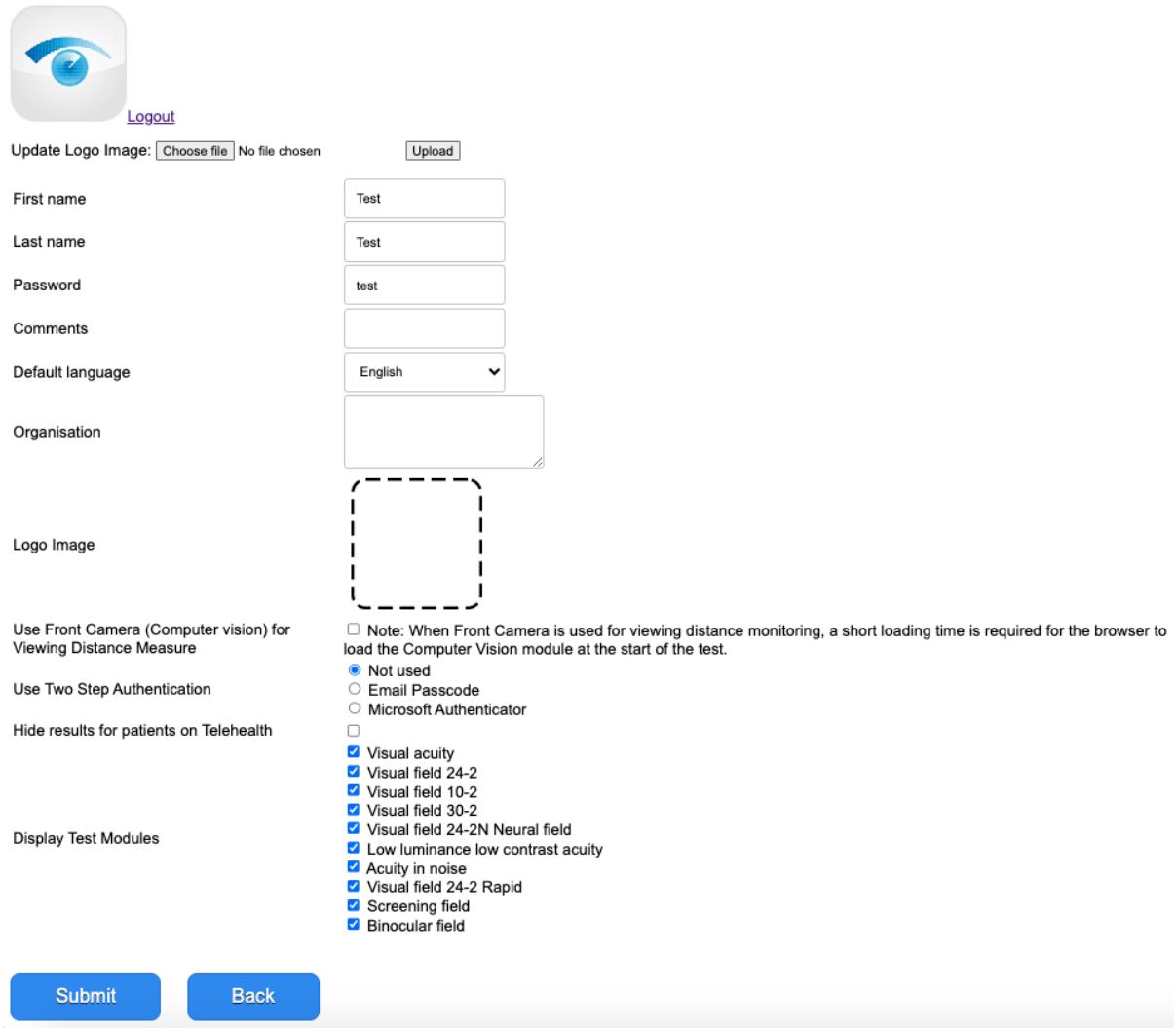


Figure 4. The Edit profile screen.

2. Make necessary changes to the desired fields

3. Click Submit to save changes

   Click Back to discard changes

Users can update basic account details:

- **First Name / Last Name:** Used to identify the user on test reports and in the system dashboard.
- **Password:** Allows the user to change their login password.
- **Comments:** Optional field for internal notes (e.g., clinic location, department, or testing role).

- **Default Language:** Sets the preferred language for the user interface.
- **Organisation:** Displays the clinic or institution name that appears on printed reports.
- **Logo Image:** Users can upload a clinic or organisation logo (supported formats: JPG, PNG). The logo will appear on the top of test reports and the dashboard.

Front Camera (Computer Vision) Settings

- The **Use Front Camera for Viewing Distance Measure** option enables or disables the AI-based monitoring module that uses the device's front camera.
- **Not used:** Disables the camera functions (used typically in Offline Mode).
- **Enabled:** When selected, the camera automatically loads the Computer Vision module at the start of each test.
- **Note:** Enabling this option may cause a short loading time while the browser initializes the webcam module.

Two-Step Authentication

For added security, users can activate two-factor authentication.
Available options include:

- **Not used:** Default (no second authentication step).
- **Email Passcode:** A verification code is sent to the user's registered email.
- **Microsoft Authenticator:** Users can link their account to the Microsoft Authenticator app.

Telehealth Display Option

The **Hide results for patients on Telehealth** setting hides visual field results when patients are accessing their tests remotely via telehealth mode, ensuring clinical data privacy.

Display Test Modules

Users can customise which testing modules are displayed on the main menu. The following modules can be enabled or disabled by ticking the checkboxes:

- **Visual acuity**
- **Visual field 24-2**

- **Visual field 10-2**
- **Visual field 30-2**
- **Visual field 24-2N Neural field**
- **Low luminance (low contrast) acuity**
- **Acuity in noise**
- **Visual field 24-2 Rapid**
- **Screening field**
- **Binocular field**

Only the selected modules will appear as available options on the test selection screen, allowing clinics to simplify the interface for their specific workflow.

5.4 Two step authentication

To improve security of login you can select to use two step authentication. This can be selected within the **Edit Profile & Settings** section. You can select Email passcode or use Microsoft Authentication.

If Email passcode is selected, then at Login, once correct user email and password has been entered, then an email will be sent to the user email address with a passcode. Enter the passcode in the form provided to login.

If Microsoft Authenticator is selected then at Login once correct user email and password has been entered, then Microsoft Authenication module is started. On first use, user can scan the QR code to generate an account on Microsoft Authenicator app on your smart phone device. Once setup, you can then enter the passcode that is shown on the Microsoft Authenicator app to login.

5.5 Linked patients

Patients who test their vision at home with MRF can nominate the user as their doctor. When the patient nominates the user as their doctor, they become a **Linked Patient**. The user will receive progression notifications for linked patients and will be able to review their data.
Click on **Linked accounts** in the Top Right hand side menu.

5.6 Team members

The user can add team members to their account. A team member will receive progression notifications for linked patients and be able to review their data.
To add a new team member, do the following:

1. Click on the **Teams** menu item on the Top Right hand menu

2. Under **Add member** , enter the team member's email address

3. The team member will appear in the list (see Figure 5)

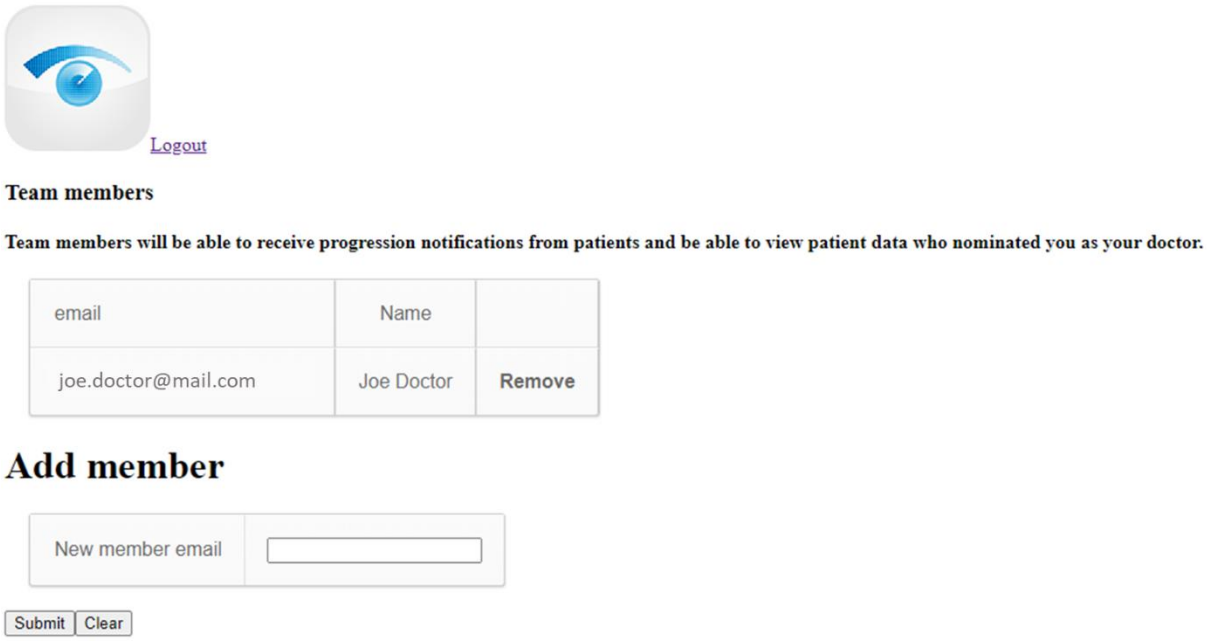


Figure 5. Adding a team member

4. A team member can be removed by clicking **Remove**

5. Click the back button of your browser to return to the home screen

How to access other accounts where you are listed as a Team member

1. Select **Teams** menu from the Top right hand menu

2. If you are listed as a team member of another account, you will find that account under "**List of accounts you are a member of"** list

3. Click on Go to account to go to that account.

4. You may then review results of that account as well as perform tests on that account.
5. To return back to default account, select “Return to..” from the Top right hand menu.

5.7 Add patient

To test a patient, the user must create a patient account for MRF online. It is recommended that the user checks for an existing account prior to creating a new account (see section 4.1 xi. for information on searching for a patient).
To create a new patient account, do the following:

1. Click on  Add patient button

   The following screen will appear (Figure 6):

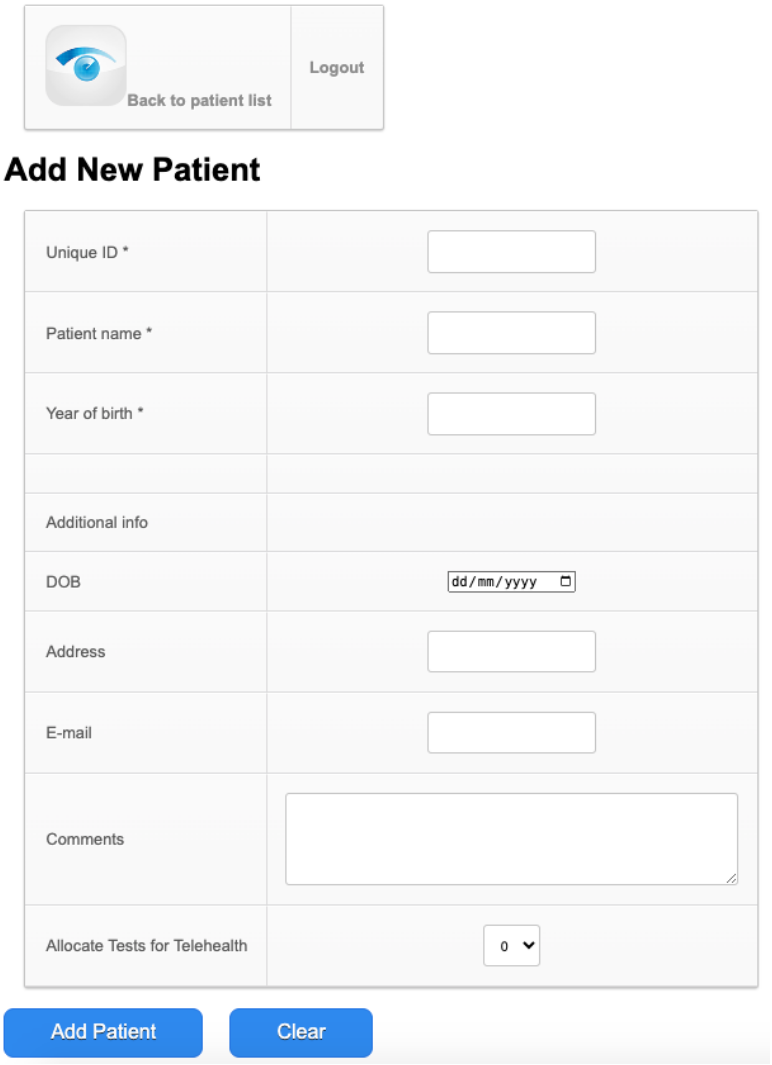


Figure 6. Creating a new patient account

2. Complete the fields (Note: The **Comments** , DOB, Address, Email field is optional)
3. The user may opt to allocate tests for telehealth. Click on the dropdown box and choose the desired number of tests to allocate. See section 10. Telehealth for more information.
4. Click Add patient to add the patient to your patient list

   Click Clear to clear the form and start again

5.8 Creating a new folder and assigning a patient

This feature allows the user to organise their patients into labelled folders.

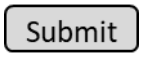
To create a new folder, do the following:

1. Click on the  **Create folder** button

   The following screen will appear (Figure 7):

Figure 7. Creating a new folder

2. Type a name for the new folder in the specified field

3. Click  to save the new folder

   Click  to clear the form and start again

   The new folder will now appear in the home screen (Figure 8):

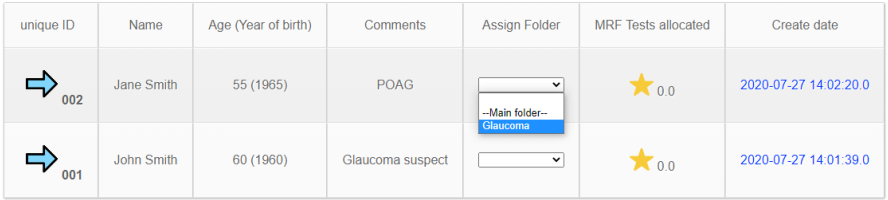


Figure 8. Assigning a patient to a folder

4. To assign a patient to the new folder, click on the drop down box under **Assign Folder** for the patient you wish to assign

5. Click on the folder you wish to assign the patient to. The patient will be moved to the new folder and will no longer be visible in the main folder of the home screen.

   Note: When viewing the patient list within a new folder, the user can return to the main folder by clicking the  **Back to main folder** button

6. The patient account screen

The patient account screen displays patient data including test history and progression rate. In addition, the user can start a new test or enable telehealth tests from this screen.

6.1 Elements of the patient account screen

Figure 9 shows the elements of home screen:

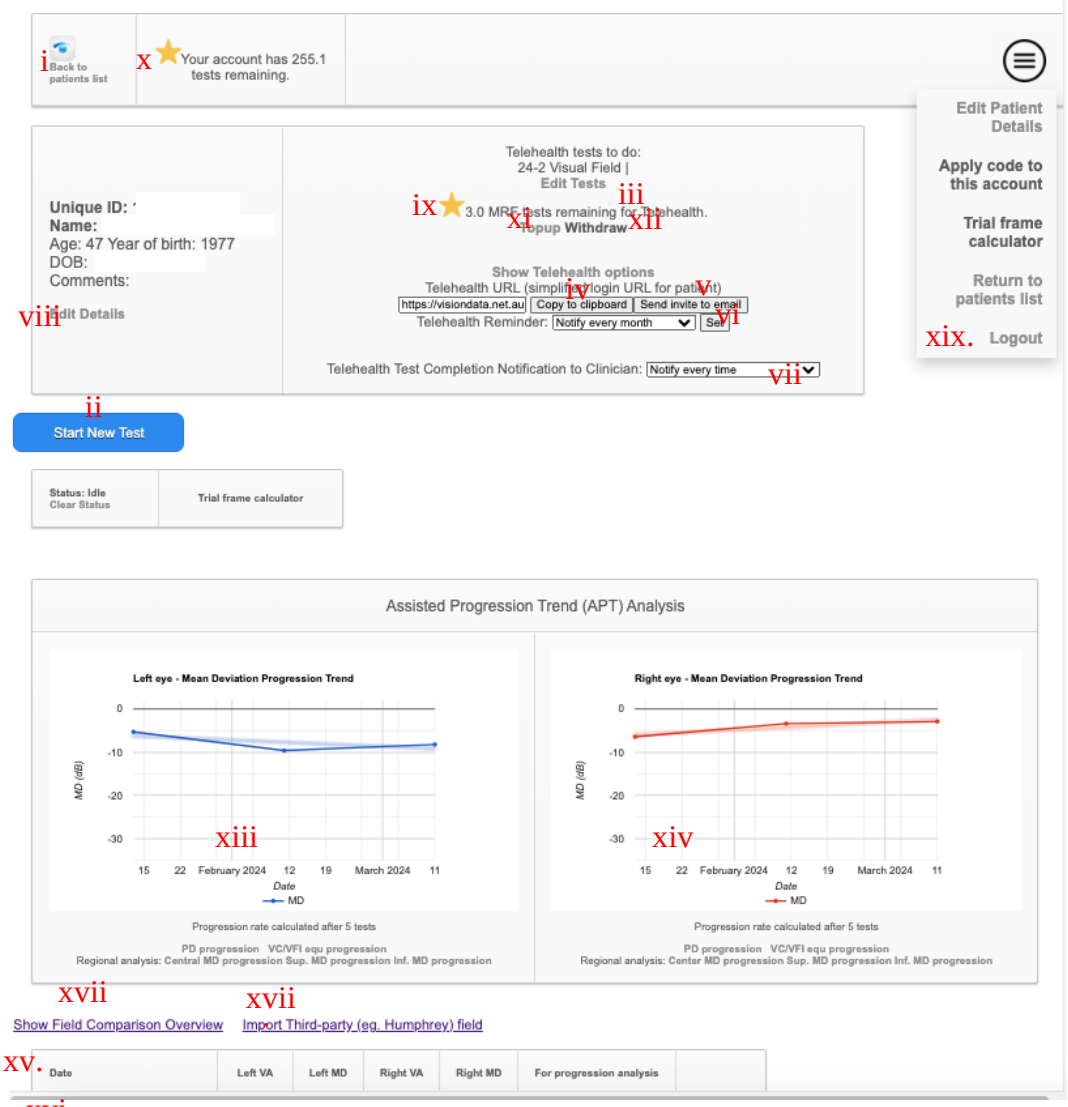


Figure 9. Elements of the patient account screen

Each element is discussed in further detail below:

i. **Back to patient list:** Return to the patient list on the home screen

ii. **Start test:** Start an MRF test (see section 8. The MRF Vision System)

iii. **Edit tests (telehealth):** Edit the tests for the patient to undertake via telehealth (see section 5.2)

iv. **Copy to clipboard (telehealth):** Copy the telehealth URL to the clipboard (see section 5.3)

v. **Send Invite to Email:** An email invitation with telehealth URL will be sent to the patient's email address on file.

vi. **Telehealth Reminder:** Set the interval for sending out a Telehealth Test reminder

vii. **Telehealth Test Completion Notification to Clinician:** Choose the criteria to notify the clinician, which can be notify every time, no notification or only notify if progression detected.

viii. **Edit details:** Edit the patient's details (see section 5.4)

ix. **Patient test account:** Displays the remaining MRF tests available to the patient

x. **Clinic test account:** Displays the remaining MRF tests available to the user

xi. **Topup:** Allows the user to top up the patient's account with 1 MRF tests from the clinic account

xii. **Withdraw:** Allows the user to transfer 1 MRF test from the user's account back to the clinic's account

xiii. **Left eye progression trend:** Displays a graphical representation of the patient's mean defect (MD, dB) trend for the left eye. Calculation requires a minimum of 5 tests (see section 5.5).

xiv. **Right eye progression trend:** Displays a graphical representation of the patient's mean defect (MD, dB) trend for the right eye. Calculation requires a minimum of 5 tests (see section 5.5).

xv. **Test history:** Lists the patient's test history

xvi. **Test results:** Displays the test data for individual tests (see section 5.6)

xvii. **Show Field Comparison Overview:** Show an overview side to side comparison of visual field test across time.

xviii. **Import Third-party (eg. Humphrey) field:** Allow Third party visual field tests to be imported.

xix. **Logout:** Log out of MRF Online

6.2 Edit tests (telehealth)

This feature allows the user to edit the tests to be performed by the patient via a telehealth consultation.
To edit the tests to be performed via telehealth, do the following:

1. Click on **Edit Tests**

   The following screen will appear (Figure 10):

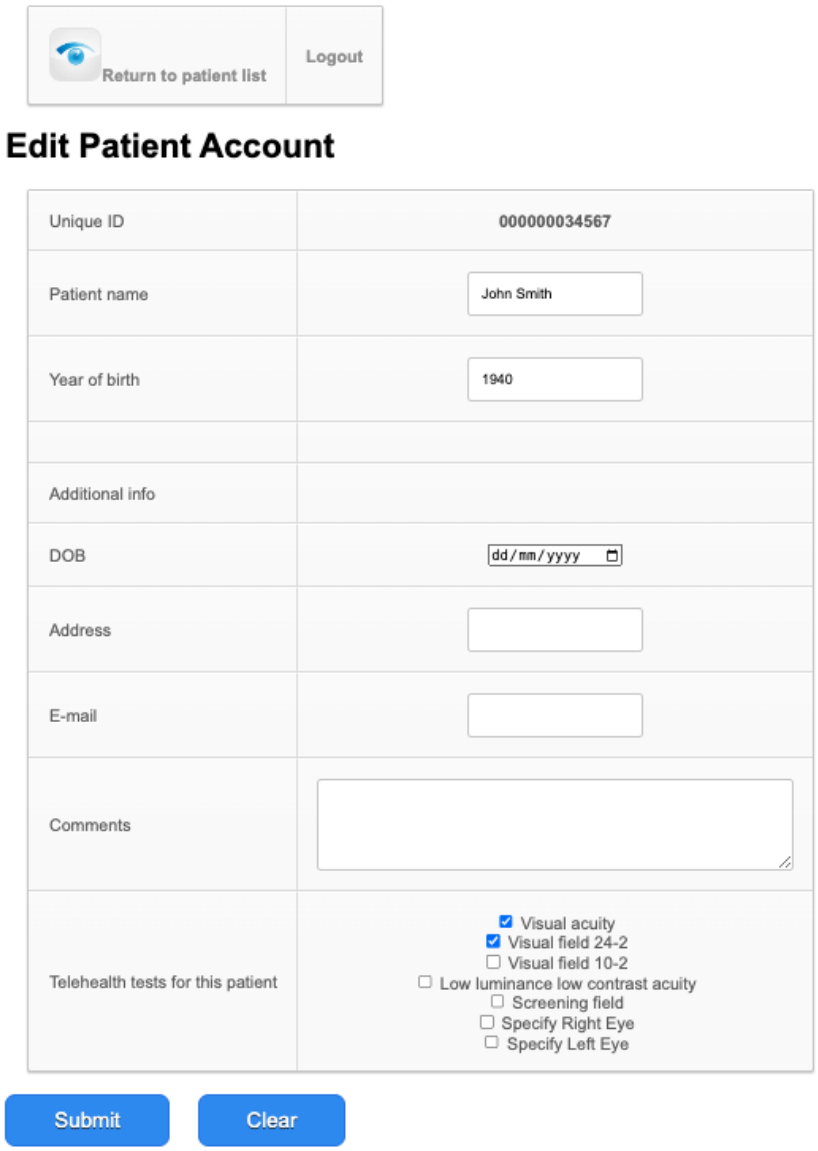


Figure 10. The Edit Tests screen

2. The patient name, year of birth and comments fields are prefilled. Ensure these details are correct
3. Check the boxes against the tests you wish the patient to perform for telehealth
4. Click Submit to save the current selection

   Click Clear to clear the form and start again
5. Click the back button of your browser to return to the patient account screen

6.3 Copy to clipboard (telehealth)

This feature allows the user to copy a simplified telehealth URL to the clipboard. This URL can be sent to the patient electronically (eg: via email) and, when accessed, allows them to login to their telehealth account using their year of birth.

To copy the simplified telehealth URL to the clipboard, click the Copy to clipboard button.

6.4 Edit details

The user can edit the patient's details by clicking on **Edit Details** (Figure 11). The patient's name and year of birth can be altered, however, the unique ID cannot be changed.

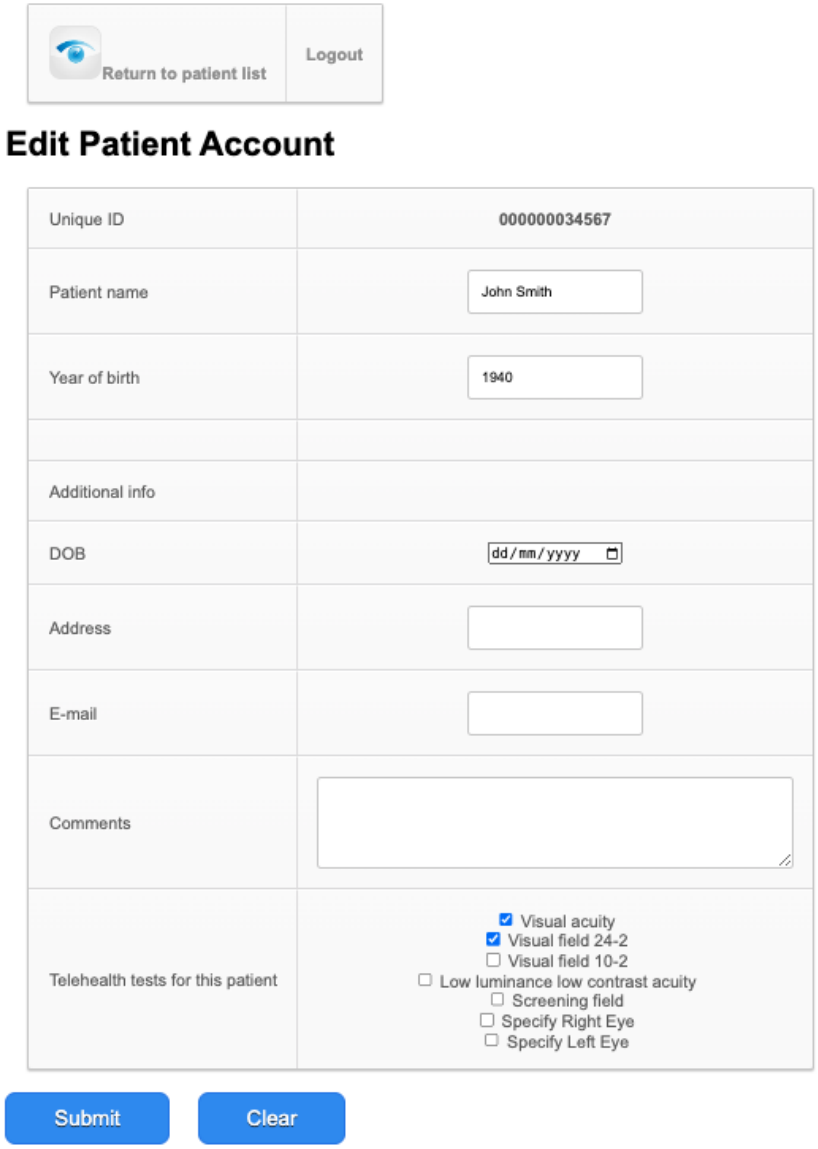


Figure 11. The Edit Details screen

6.5 Progression trend

MRF Online displays the patient's mean defect (MD) progression trend for the left and right eyes. A minimum of 5 exams is required for the progression trend to be calculated and displayed. An example of a progression trend for a patient's left eye is shown in Figure 12.

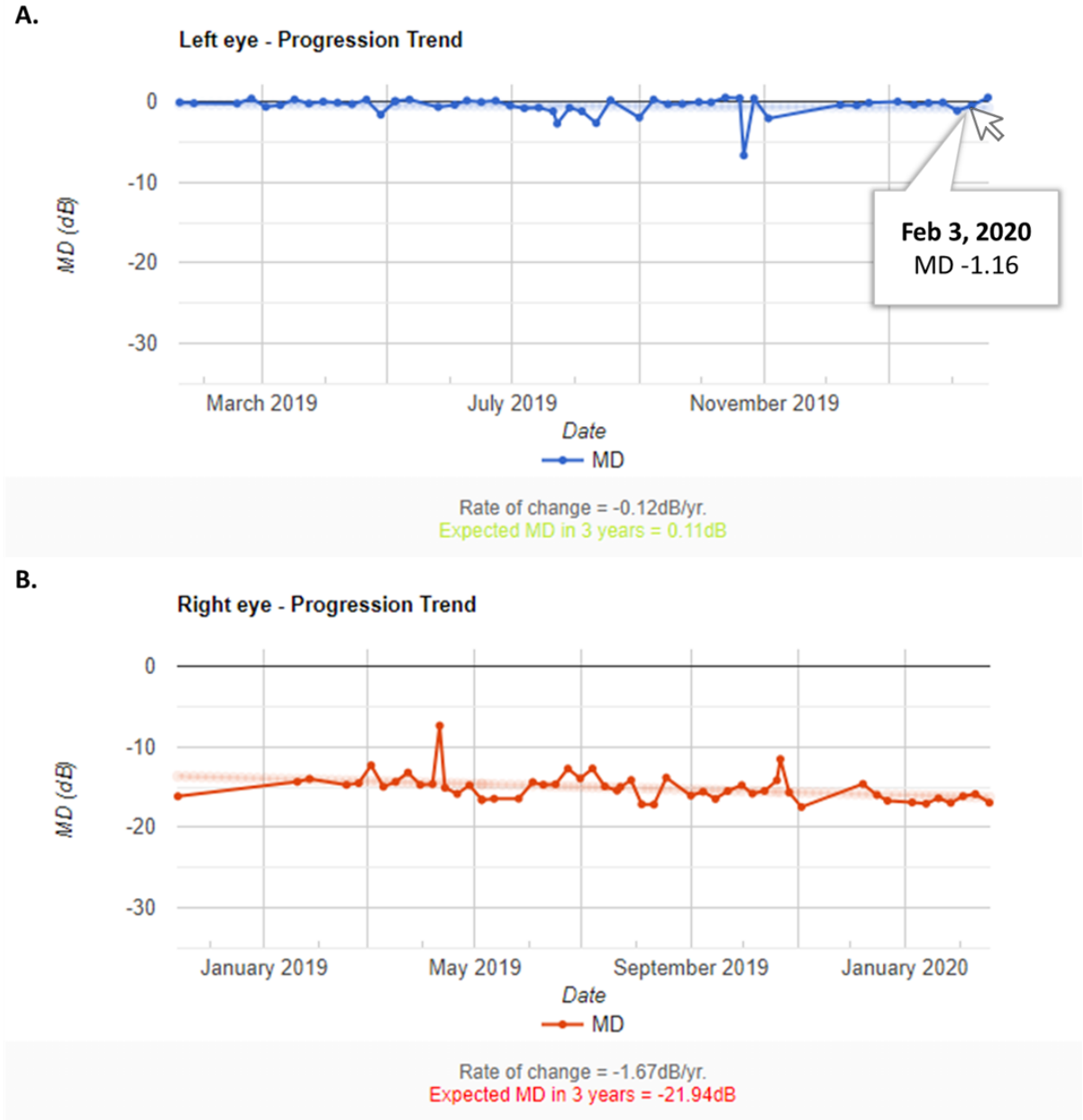


Figure 12. Example progression trends. A. Left eye progression trend for a normal eye. Note that hovering over a data point displays the date and MD for that test. B. Right eye progression trend for a glaucoma eye.

The x-axis for the progression trend graph (Figure 12) displays the time (month, year) and the y-axis represents the MD (dB). Note that a regression line is fitted through the data points. The rate of change is given as a value in dB/yr and the expected MD in 3 years is shown in dB.

Different Trend analysis can be displayed by selecting the corresponding link underneath the first trend analysis graph:

6. PD Progression – Show graph of Pattern Deviation trend

7. VC/VFI equ progression – show graph of Visual capacity (%) trend
8. Regional analysis Central MD progression - show progression of MD calculated from the central region
9. Regional analysis MD progression inf MD - show progression of MD calculated from the inferior region
10. Regional analysis MD progression sup MD - show progression of MD calculated from the sup region

6.6 Progression Trend - Visual Field Comparison Overview Screen

Users can compare the visual field test outputs for each eye side by side in a chronological fashion by selecting the **Visual Field Comparison Overview** link. This will then display the Right eye and Left eye visual fields separately, and the 24-2/30-2 fields will be displayed in different section to macular 10-2 fields for each of comparison. Multiple test results can be viewed chronologically and it can be scrolled across on a scroll bar.

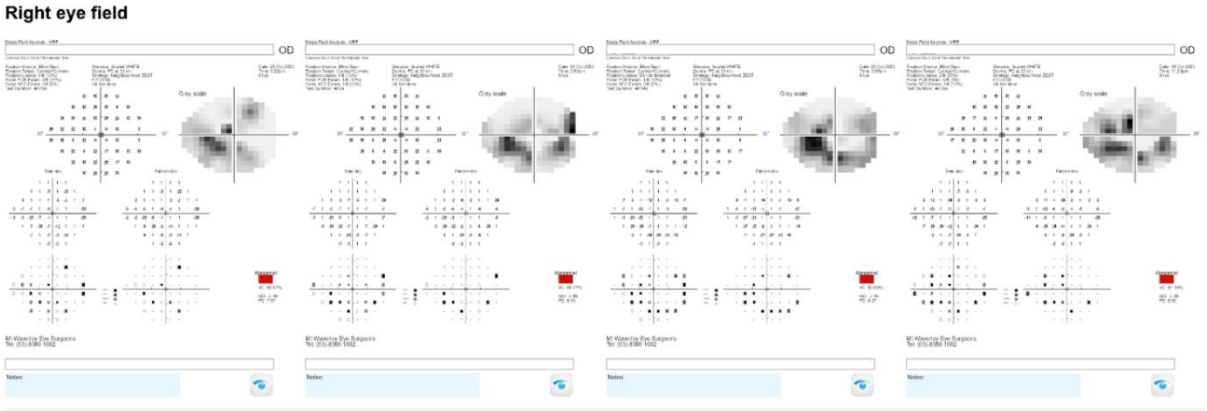


Figure 12.1: Example Visual Field Comparison Overview display for a Right eye 24-2 visual field series.

If third-party visual fields are imported as an image (jpeg / png) or pdf, then the visual field will be displayed along side visual field tests performed on MRF on the same horizontal scroll area for visual comparison.

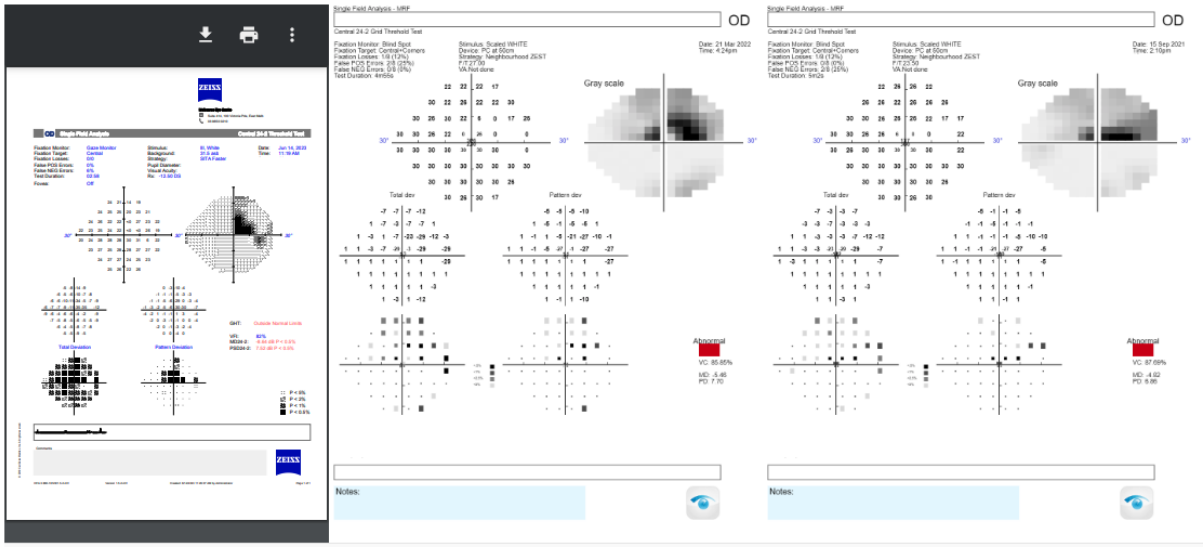


Figure 12.2: Example Visual Field Comparison Overview display for a Right eye 24-2 visual field series for HFA visual field and MRF visual field.

6.7 Test results

Individual test results can be accessed by clicking on a date in the Test History (Figure 9 xiv). This opens the Test Results screen (Figure 13). The Test Results screen displays the following:

- The date of the selected test
- The option to download a printer friendly version of the test results as a pdf
- Test results for each eye that was tested (see section 8. The MRF Vision System)
- Progression analysis for each eye (see section 9. Visual Field Progression)
- The option to download a Microsoft Excel file containing the raw data for each eye by clicking on **Left data** or **Right data**

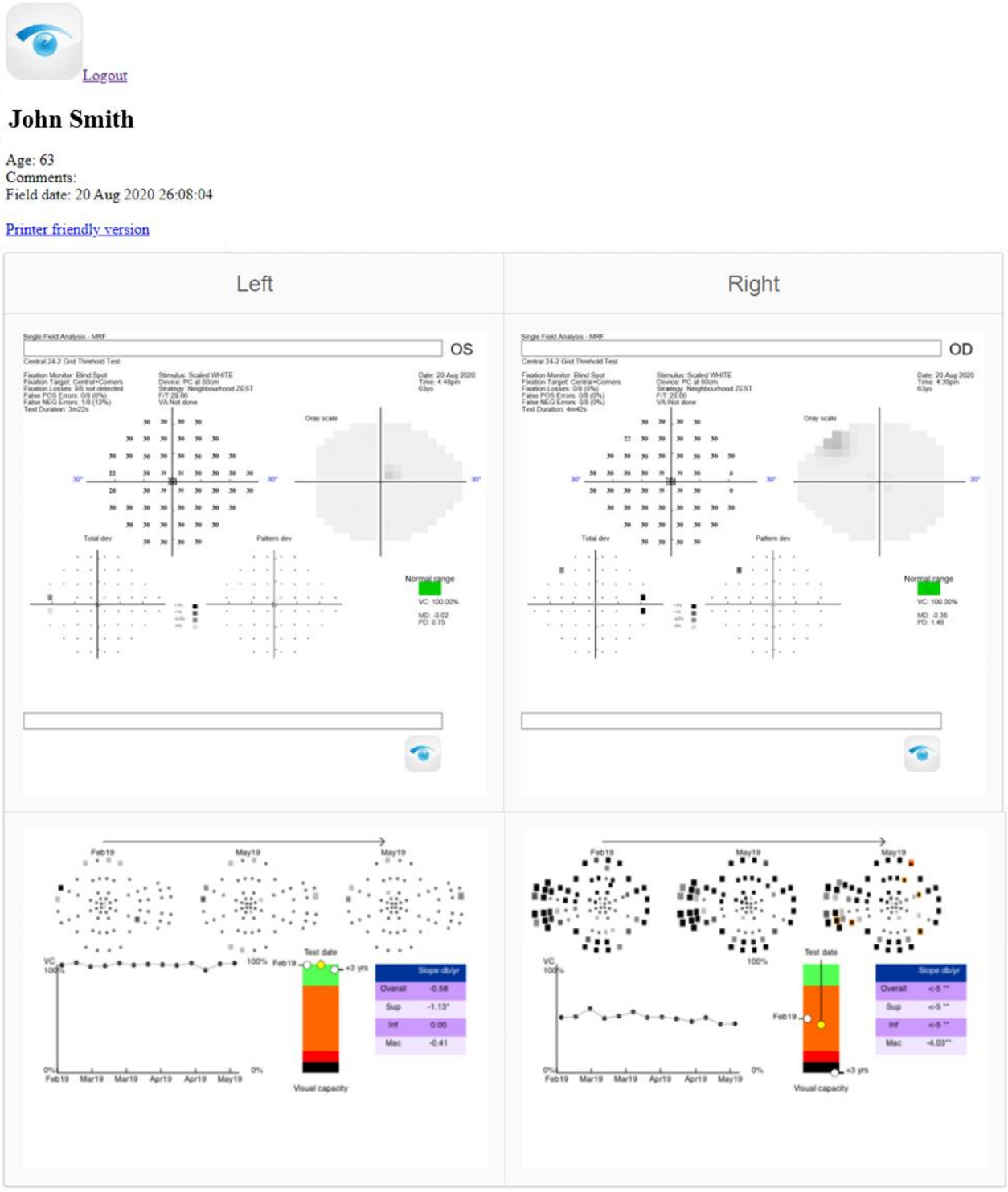


Figure 13. The Test Results screen.

6.8 Importing Third-party test results

User can even import third-party fields (in pdf or png or jpeg) from HFA or Medmont or FDT so the previous test results can be compared to MRF test results. For HFA pdf, the visual

field values are imported automatically, but for other third-party field tests the values can be entered manually. To import Third-party test results, select the **Import Third-party (eg Humphrey) field** link.

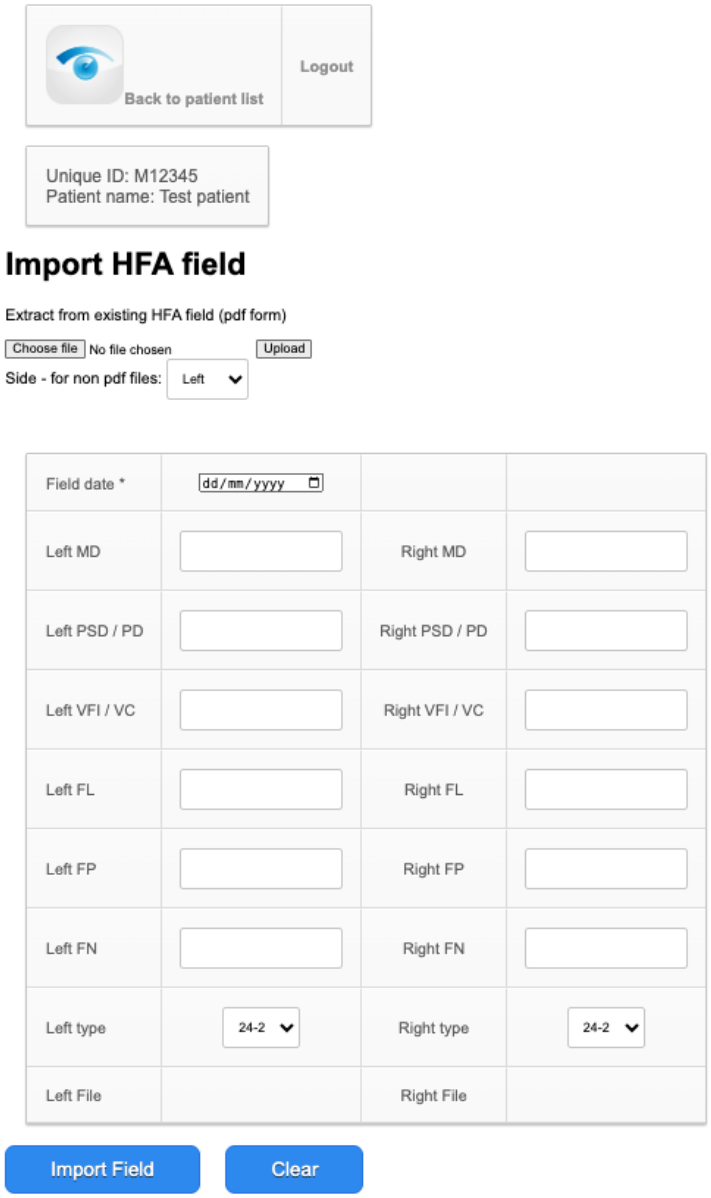


Figure 13.1: Import Third-party field screen

To import HFA visual field test: Click on Choose file button and select a HFA visual field PDF file for one eye first (eg, Right eye). Click on Upload Button, this will save the HFA field to the MRF cloud and the page will automatically detect the side of the eye, and extract some key information from the PDF file, such as the MD, PSD, VFI , FL, FP and FN values, Visual field test date. It will also identify if the field test is a 24-2, 30-2 or a 10-2 test. Repeat the process for the fellow eye (eg. Left eye). The form should now be fully populated. Click on

Import Field button to import both the Right and Left eyes as a single test episode into the patient account.

To import other third-party field test: Click on Choose file button and select a visual field image or pdf file for one eye first (eg, Right eye). Select the correct side (eg Right eye) from the drop down button. Click on Upload Button, this will save the field to the MRF cloud. Manually enter some key information such as the MD, PSD, VFI , FL, FP and FN values, Visual field test date in the form below for that eye. Also identify if the field test is a 24-2, 30-2 or a 10-2 test. Repeat the process for the fellow eye (eg. Left eye). The form should now be fully populated. Click on Import Field button to import both the Right and Left eyes as a single test episode into the patient account.

7. Setting up the patient

Prior to conducting a visual field exam using MRF, set up the patient according to the following instructions to ensure reliable results.

7.1 Room set up

Prior to performing an MRF exam, select an area where the patient can be seated comfortably. Ensure the computer screen is free from dirt and fingerprints by wiping it with a microfibre cloth. Dim the room lights and ensure the screen is oriented such that there are no reflections off the screen (e.g. from ceiling lights, doors, windows, etc).
Turn the brightness of the screen to a maximum. Allow webcam access on the web browser if a webcam is used for viewing distance/ gaze / environment monitoring.

7.2 Near correction

The user must wear their habitual near correction whilst performing the exam. This may be in the form of single vision near spectacles, multifocal spectacles (including bifocals), contact lenses or habitually unaided.

7.3 Test distance

The MRF test distance is determined by the type of test to be performed any the resolution of the computer screen that will be used for testing. On screen instructions will advise of the appropriate test distance (typically between 20 and 50cm). It is the responsibility of the user to ensure that the patient maintains the correct test distance throughout the duration of the test. If the webcam reference has been set, the patient will be instructed to move further or move closer to the desired viewing distance based on the webcam analysis of face size.

8. Test overview

The MRF uses a Bayes predictor and neighbourhood logic resulting in a very efficient method of thresholding. For ALL test grids (except RED threshold) spot size increases from the fovea (about Goldmann size II) to peripheral locations (about Goldmann size V) to return fixed thresholds and variability at all locations. This has the benefit of making early defects easier to expose in the periphery. Spots have 'soft' edges with a luminance ramp (see Figure 8).

Test grids optimise spot locations for ALL causes of vision loss but also have specific patterns further refined for monitoring diabetes, glaucoma, macular or neural losses.

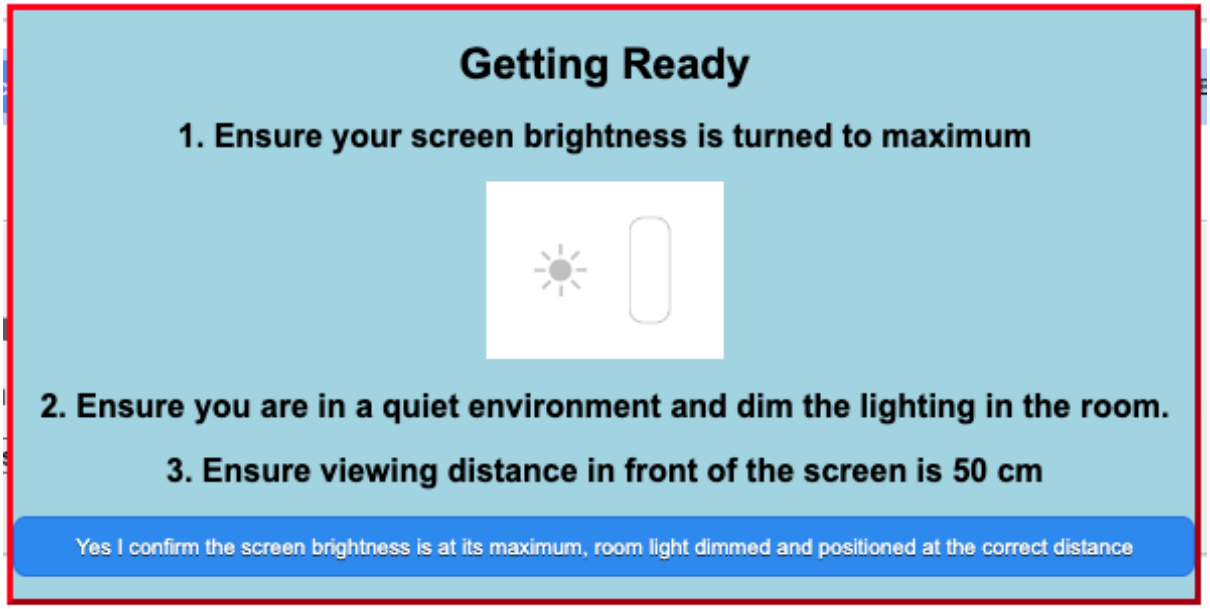
Screening is performed at 2-3dB below expected threshold on an optimised grid designed to detect ALL causes of vision loss and implements a neighbourhood logic for retesting missed locations.

9. The MRF Vision System

To perform a test with MRF Online, do the following:

1. Log into your account (see section 3.2 Logging into your account)
2. Add a patient (see section 4.6 Add Patient), or select an existing patient from the Patient List (see Figure 2 xii)
3. From the Patient Account Screen, select Start New Test button (Figure 9 x). The MRF Vision System will open in a new window (Figure 14)

A popup alert screen will be displayed to remind you to turn screen brightness to maximum, ensure room light is dimmed and (if calibration has been completed) maintain correct viewing distance.



There are several Tests that can be performed on the modular MRF Vision System. The MRF Vision system is organised into sections. The first section is the Calibration section and the last section is the Save test section. Other tests are in their individual sections and these can be added or removed by selection in the Edit Profile & Settings section (see Section 4.3)
Step 1, the screen calibration (section 8.1) is compulsory the first time the MRF Vision System is used. The user may choose which of the tests they wish to perform (Steps 2-7).
Step 8, Save Test (section 8.8), is also compulsory.
The top section of the page also allow user to select the Voice Guidance language. A larger fixation target option can also be chosen.

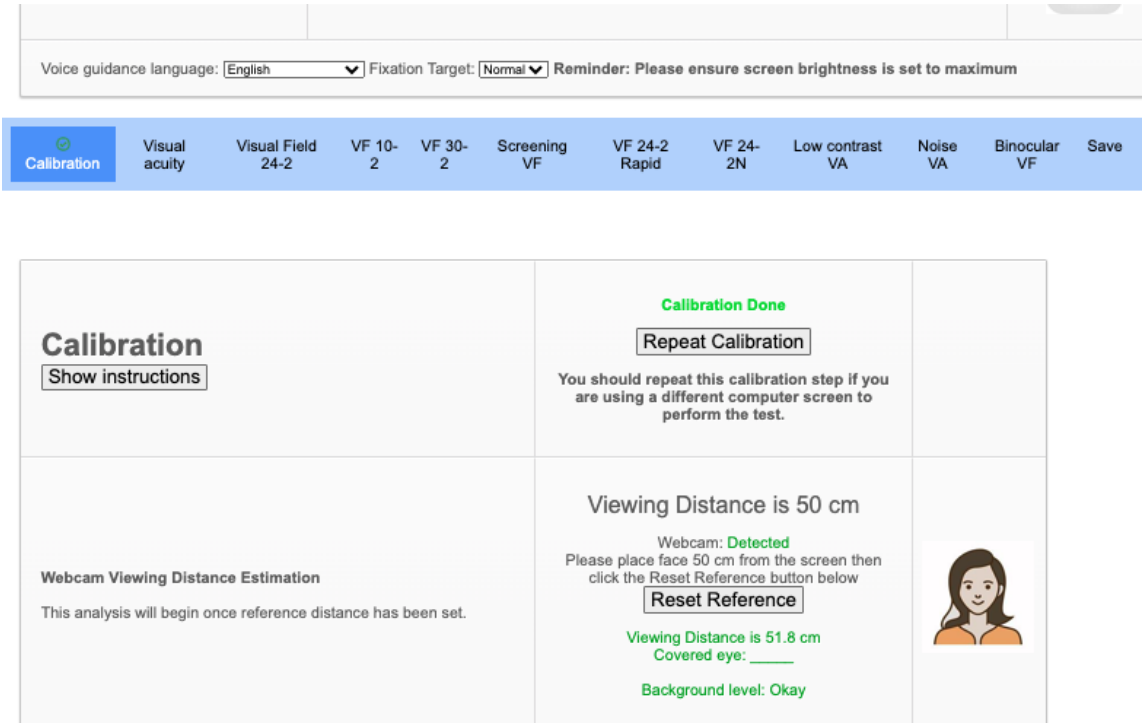


Figure 14. The MRF Vision System.

9.1 Section 1: Screen Calibration

Prior to conducting a test, a screen calibration must be performed. The calibration is stored and does not need to be repeated each time the user logs in, however, the calibration must be repeated each time a new computer screen/device is used. The calibration also needs to be repeated once a year on the same computer screen or device, or if the cache of the web-browser is cleared. To conduct a screen calibration, do the following:

1. Click Start Calibration
2. The Calibration Screen will open (Figure 15). Hold a standard size bank/credit card in the white box on the screen. You can also select Ruler button to change the physical object length to 5cm on a Ruler.
3. Click the ⊖ and ⊕ until the edges of the white box match the edges of the bank/credit card (or 5 cm on a ruler). You can also drag the following icon  with the mouse left and right to move the edge of the white box to match the physical length.
4. Click DONE

The screen calibration is complete.

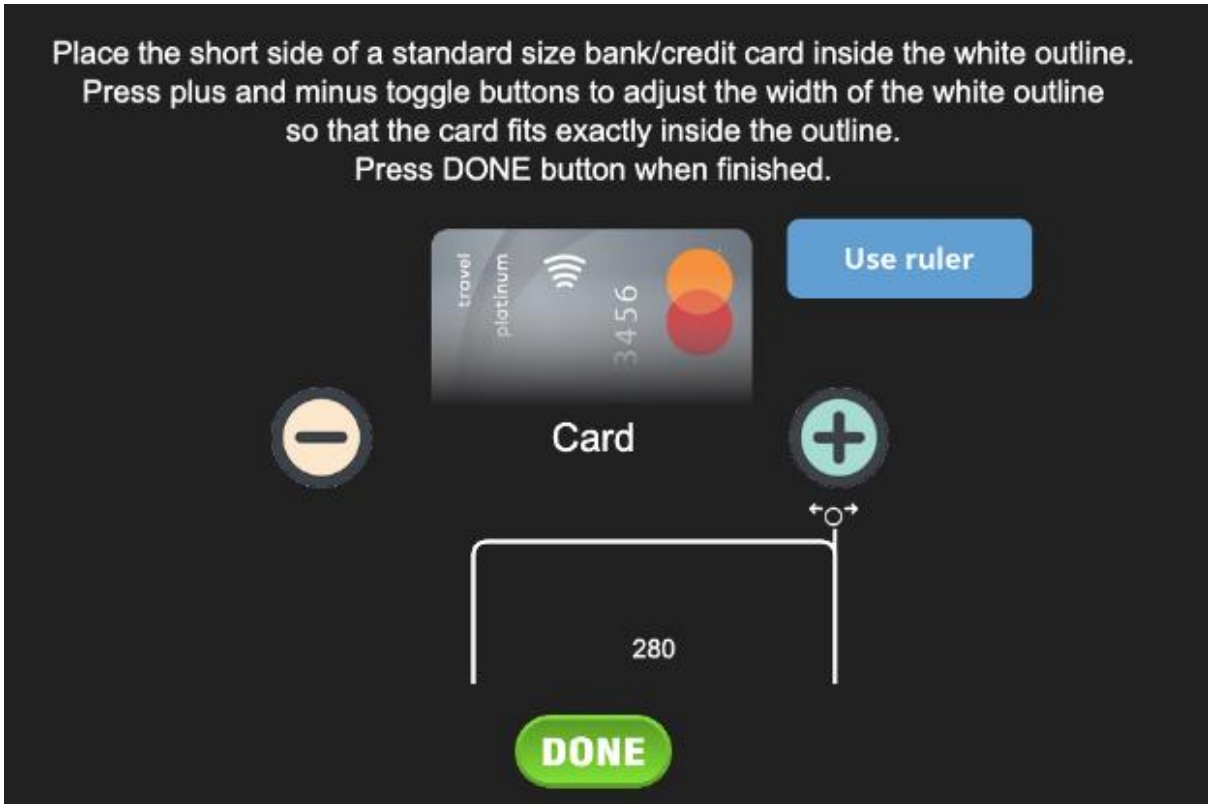


Figure 15. The Calibration Screen.

9.2 Calibration of AI-enabled webcam analysis of Front facing camera

The Front Facing camera of the computer device can be used for the monitoring several parameters for visual field testing, most importantly the Viewing distance.
To first use the Front facing camera, it must first be calibrated once to set the reference. To do so, move your face to the viewing distance specified, then click on **Set Reference (or Reset Reference)** button. Ensure your face is positioned front on towards the front-facing camera. Your browser may prompt you to allow access to the front-facing camera (or web-cam), please select Always allow if you would like to use this feature.
Once done, MRF system will commence monitoring the viewing distance in real time and the estimated value will be displayed on screen. If the estimated viewing distance is further than desired viewing distance by 10% then you will be prompted to move closer to the screen. Conversely, If the estimated viewing distance is closer than desired viewing distance by 10% then you will be prompted to move farther from the screen. This reference can be used for different patients or a new reference can be set for each new patient using the MRF system test.

The following Sections (2-7) outline the visual acuity and visual field options that are available to the user. The user may choose to administer one or a combination of these tests. It is not compulsory to complete all tests. The tests can be completed in any order. You can move to the next section by clicking the **Next Section** button.

9.3 Functions of AI-enabled analysis of Front Facing Camera

During testing, the webcam is used to monitor the patient's position, gaze stability, eye coverage, and background lighting. The system provides guidance to ensure that testing conditions remain correct and reliable.

1. **Viewing Distance**
    - The webcam continuously measures how far the patient's face is from the fixation point.
    - If the face moves closer or farther away by more than **10% of the recommended viewing distance**, the system provides feedback:
        - **Voice guidance** will play either *"move farther back"* or *"come closer"*.
        - A **visual animation** appears around the central red fixation target: a contracting red circle indicates moving too close, while an expanding circle indicates moving too far away.
    - At the end of the test, the system calculates and displays the **percentage of test time spent outside the acceptable distance range**.
2. **Gaze Monitoring**
    - Gaze stability is assessed in the background during testing, without feedback to the patient at the time.
    - After the test, a **gaze stability chart** is generated on the bottom left-hand corner of the printed test report.
    - This chart highlights times when fixation deviation occurred, allowing clinicians to assess the reliability of the results.
3. **Eye Cover Detection**
    - Before starting each test, the webcam checks which eye is covered.
    - If the incorrect eye is covered, the system displays a **warning message** so the patient can correct it before proceeding.
    - During testing, the main module will continue to indicate whether the right or left eye is covered.
4. **Background Lighting Conditions**
    - The webcam analyses background brightness during test setup and testing.
    - A warning is displayed in the main testing module if the environment is **too bright**, otherwise it is displayed as **acceptable**.

9.4 Section 2: Visual acuity test (High contrast acuity)

Near Visual acuity test

1. Ensure the patient has been set up according to the instructions provided in section 6

   (Setting up the patient) and occlude the non-testing eye

2. Click on Right eye or Left eye to start the test (Figure 16)

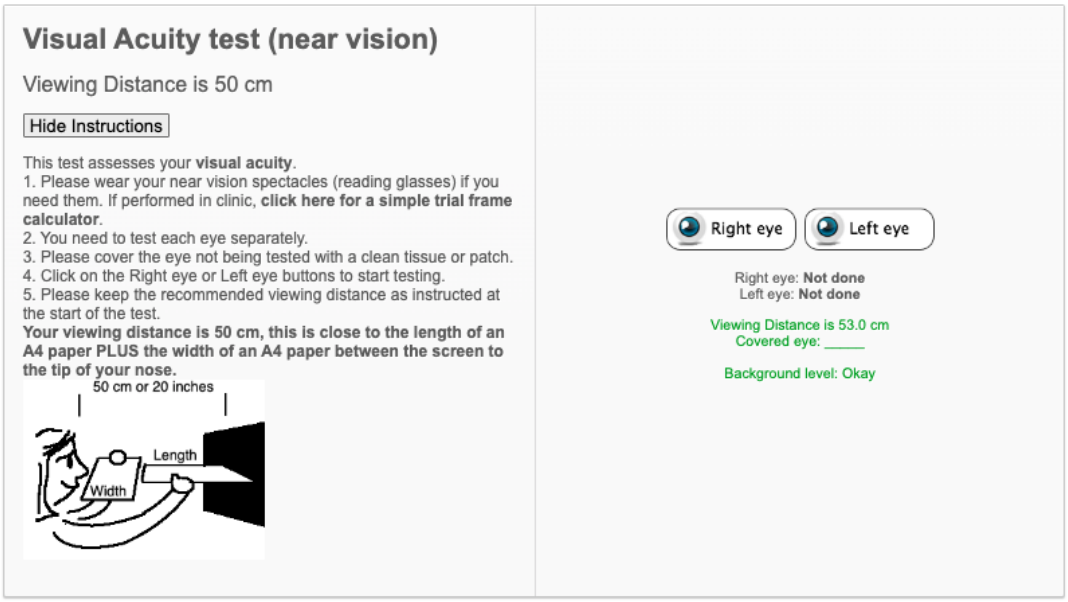


Figure 16. Step 2: Visual acuity test (high contrast acuity).

1. A tumbling E in a random orientation is presented to the patient in the middle of the screen (Figure 17)
2. Instruct the patient to click on the tumbling E at the bottom of the screen that corresponds to the orientation of the target. The target will get progressively smaller.
3. If the patient is unsure, they may click on the blue question mark
4. At the completion of the test, the user will be returned to the MRF Vision System dashboard

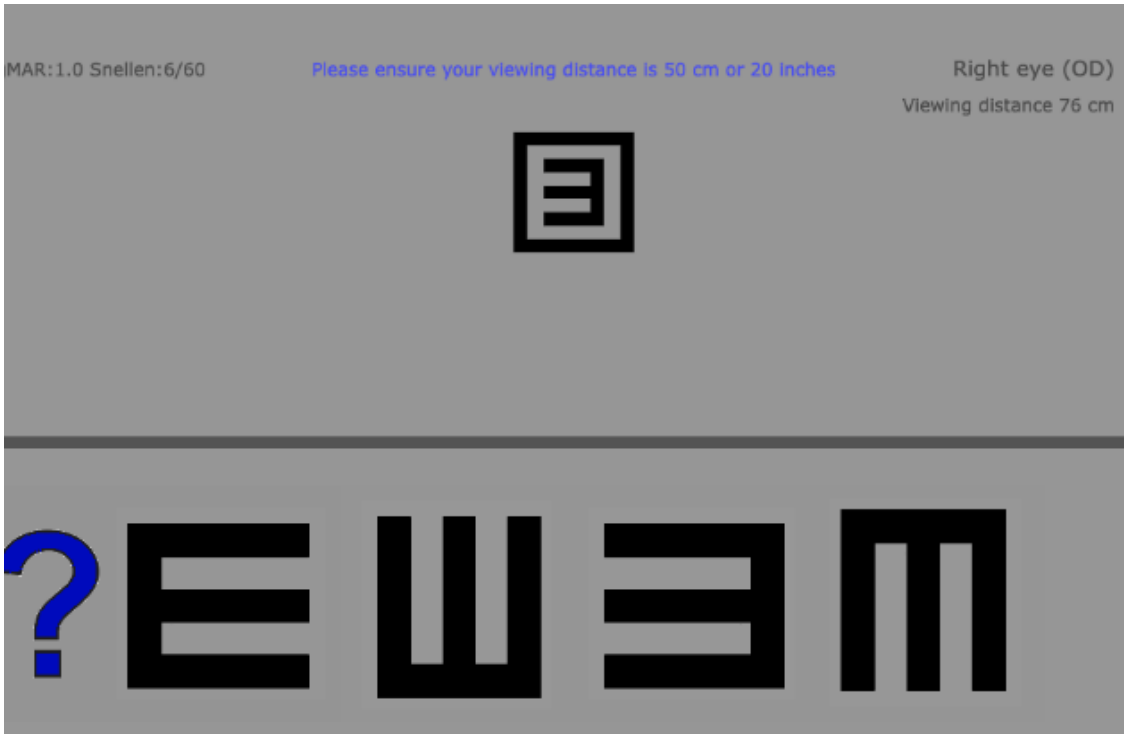


Figure 17. The high contrast visual acuity task.

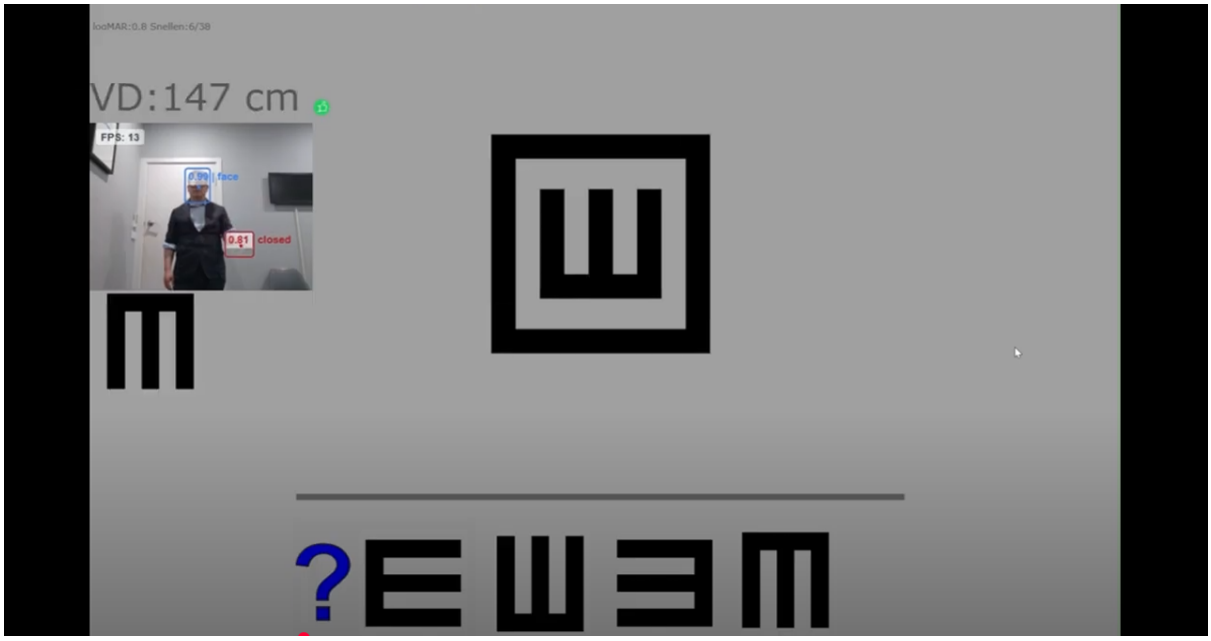
Distance Visual Acuity with Hand-Motion Detection

Test Setup

- Seat the patient approximately 2 metres from the display screen in a well-lit environment.
- Ensure the patient's hand is clearly visible within the webcam frame.
- Ensure no multiple people or multiple hands are in the webcam view.
- The non-testing eye should be occluded in the same way as other acuity tests.

Test Procedure

- A visual target is presented on the screen.
- The system prompts the patient to indicate the orientation of the target by moving their hand **up, down, left, or right**.
- The webcam, using AI-based motion detection, automatically detects the direction of movement and records the response.
- Target size adapts according to the correctness of responses to determine the patient's visual acuity threshold.



Test Completion

- The test ends once the software has determined the smallest optotype size the patient can reliably identify.
- The results are stored in the patient's record, alongside other acuity test results.

Output

- Reported in standard logMAR units or Snellen equivalent, consistent with existing visual acuity reporting.
- Results are available in the **Test Results screen** and can be exported with other test data.

Notes

- Patients should be instructed to keep their movements clear and deliberate to ensure accurate detection.
- Any interruptions in webcam visibility (e.g., poor lighting, hand moving out of frame) may cause the system to prompt the patient to repeat the gesture.

9.5 Visual field test (24-2)

9.5.1 Performing a visual field test (24-2)

1. Ensure the patient has been set up according to the instructions provided in section 6 (Setting up the patient) and occlude the non-testing eye.

Animation guide will prompt the correct occlusion of the eye for a particular eye. The Front-facing camera, if enabled, will attempt to analyse the patient's facial feature to determine if an eye is occluded with an occlude. If the wrong eye is occluded for a test then an alert will be displayed to ask user if the correct eye has been occluded.

2. Click on Right eye or Left eye to start the test (Figure 18)

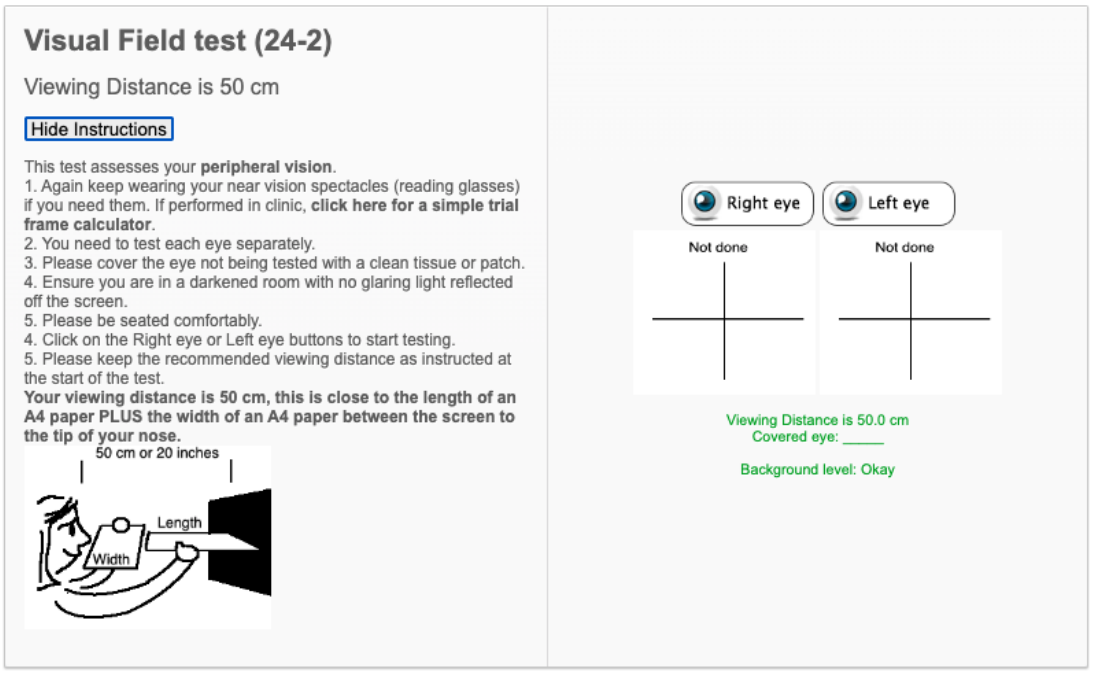


Figure 18. Step 3: The visual field test (24-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 19). The red cross may change positions during testing.
4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:
    a. click on the brown 'response box' (see Figure 19) with the mouse pointer, or;
    b. tap the space bar

    Note: An audible click will sound each time the patient registers a response
5. Click on the box or press space bar to start the test
6. If front-facing camera is enabled, then Viewing distance will be monitored in real time. If viewing distance if 10% further than desired viewing distance then an animation will be displayed with animated circle moving towards the central red dot, and a prompt will be sounded to ask patient to move closer towards the screen. Conversely, if viewing distance if 10% closer than desired viewing distance then an animation will be displayed with animated circle moving away from the central red dot, and a prompt will be sounded to ask patient to move farther away from the screen.
7. At the completion of the test, the user will be returned to the MRF Vision System dashboard
8. ***Pausing test***: the test may be paused by clicking on the red cross in the centre or press the Esc key twice. The test can be resumed by pressing the Resume test button, or user can then also select exit test within the screen to exit the test.

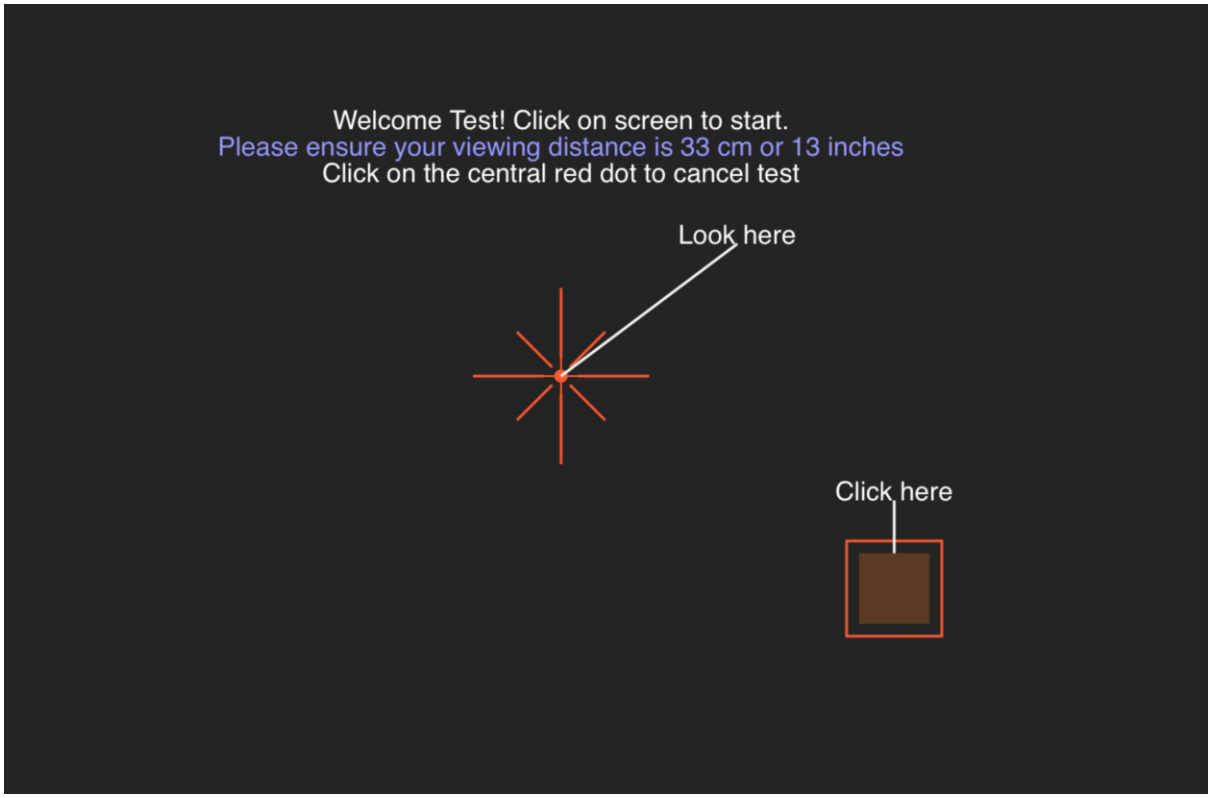


Figure 19. The visual field task (24-2).

9.5.2 Visual field test (24-2) results

An example of the visual field (24-2) output is given in Figure 20.

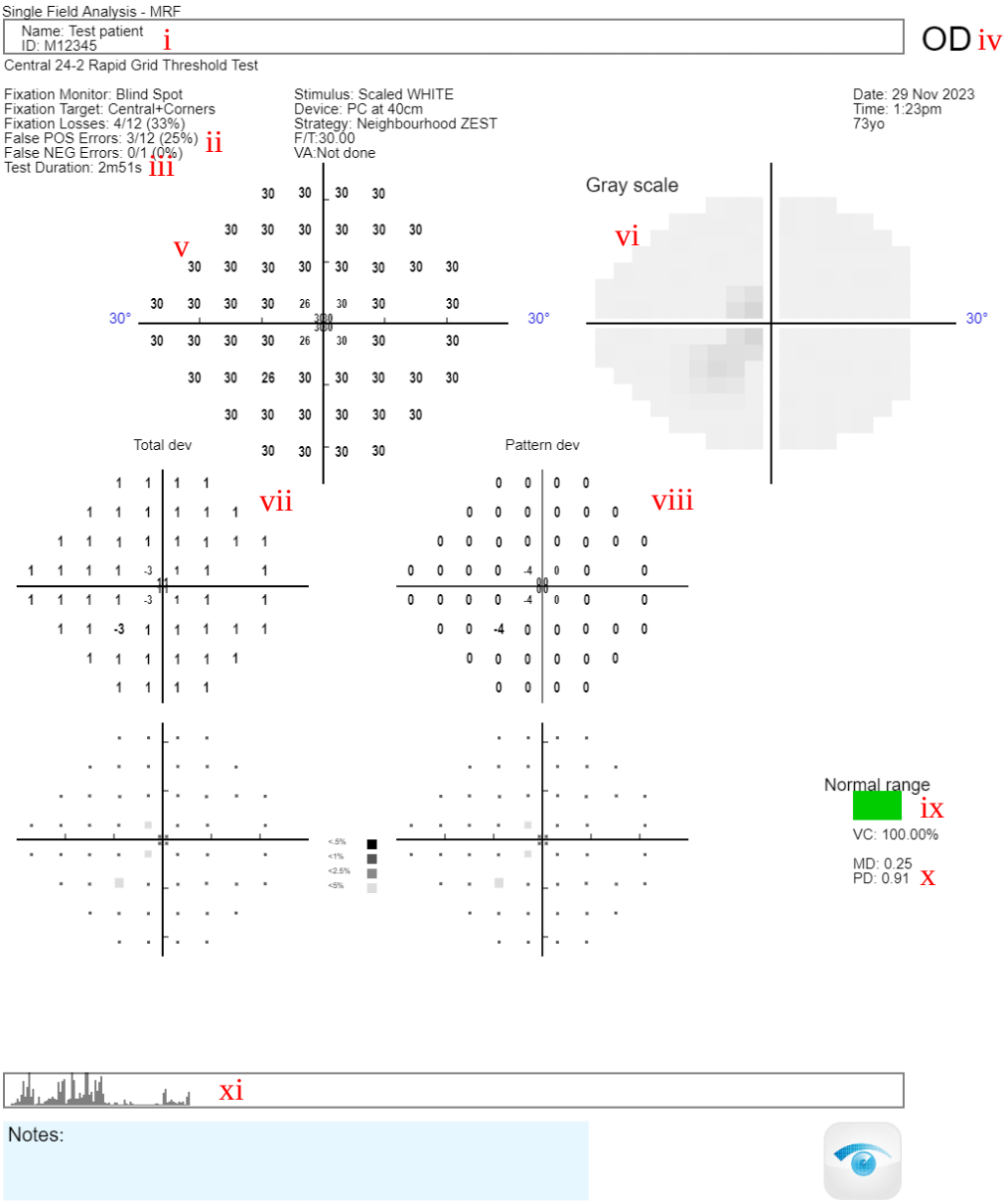


Figure 20. The 24-2 visual field printout.

Elements of the visual field printout are given below:

i. Patient details

ii. Reliability indices

iii. Test duration

iv. Eye tested

v. Numeric plot

vi. Gray scale

vii. Total deviation

viii. Pattern deviation

ix. Normative indicator

Normal

Borderline

Abnormal

x. Global indices

xi. Gaze monitoring plot

9.5.2.1 The gaze monitoring plot interpretation

The gaze monitoring plot displays fixation stability over time.
A relatively flat trace indicates stable fixation.
Spikes represent deviations from the fixation target, with larger or more frequent spikes indicating unstable gaze.
Clinicians should interpret this plot in the same way as gaze tracking traces from traditional perimeters (e.g., Humphrey Field Analyzer).

9.5.3 Progression analysis

See section 9.10 (Progression analysis) for more information.

9.6 Macular field test (10-2)

9.6.1 Performing a macular field test (10-2)

1. Ensure the patient has been set up according to the instructions provided in section 6 (Setting up the patient) and occlude the non-testing eye
2. Click on 

or 

to start the test (Figure 21)

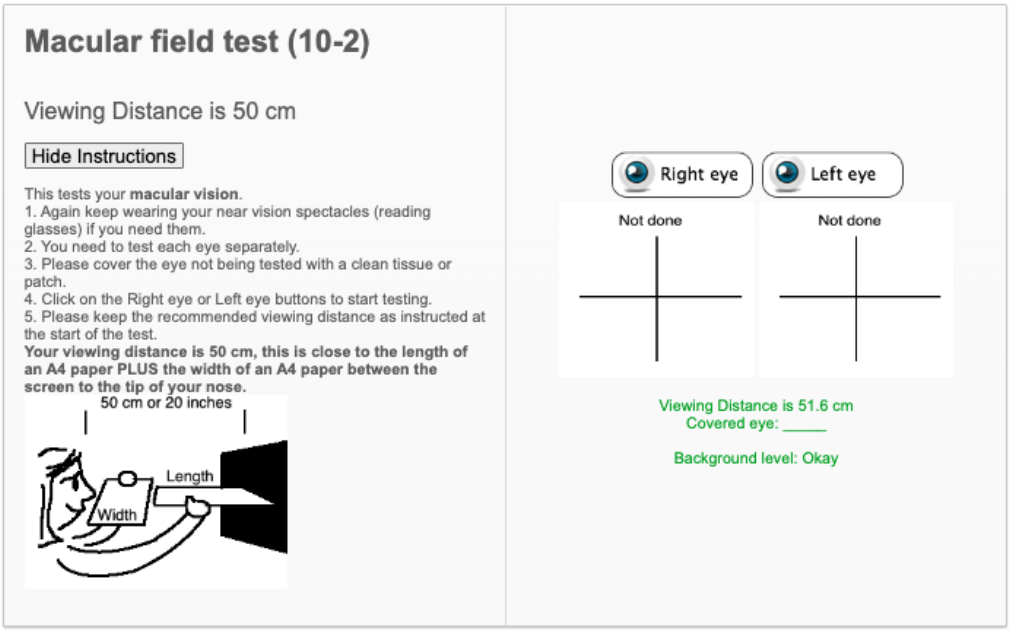


Figure 21. Step 4: The macular field test (10-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 22). The red cross may change positions during testing.
4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:
    a. click on the brown 'response box' (see Figure 22) with the mouse pointer, or;
    b. tap the space bar

    Note: An audible click will sound each time the patient registers a response Please note, grey spot can also be present in middle of the central circle which the patient will need to respond to similar to those presented outside of the central circle.
5. Click on the box or press space bar to start the test
6. At the completion of the test, the user will be returned to the MRF Vision System dashboard
7. The test may be paused by clicking on the red cross
8. The user may cancel the test by clicking on the X in the upper left corner of the screen

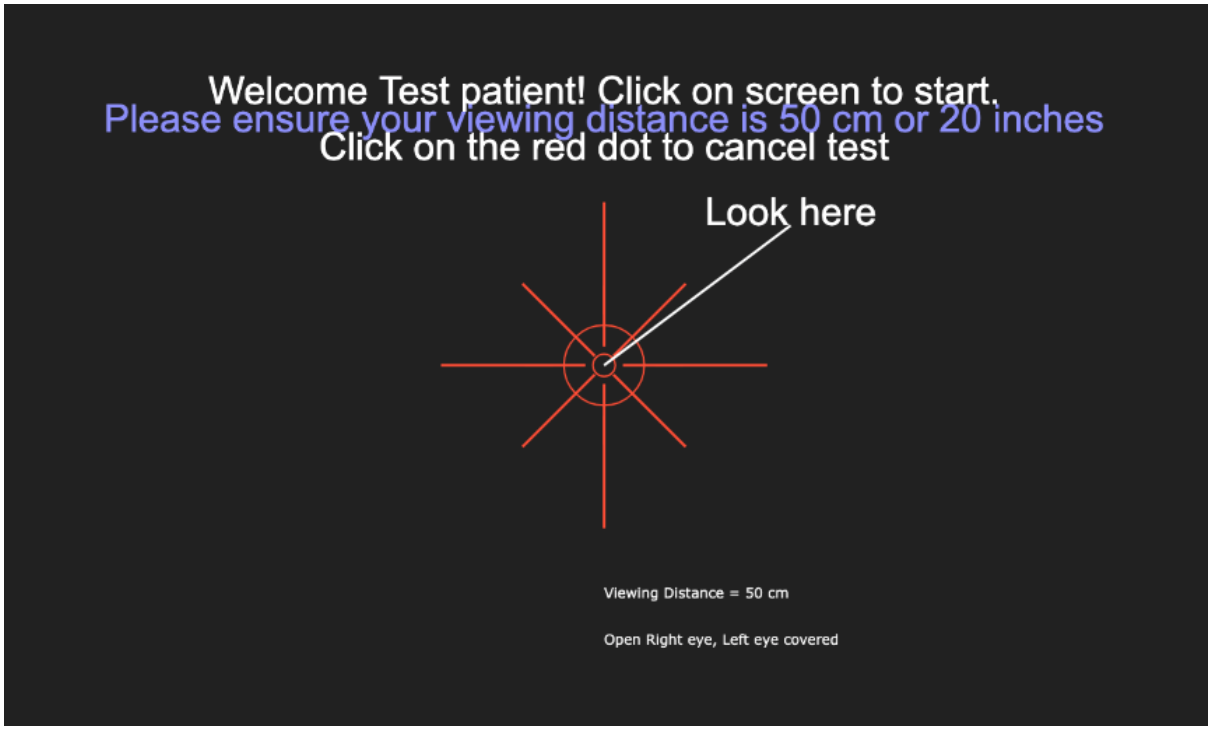


Figure 22. The macular field task (10-2).

9.6.2 Visual field test (10-2) results

An example of the visual field (10-2) output is given in Figure 23.

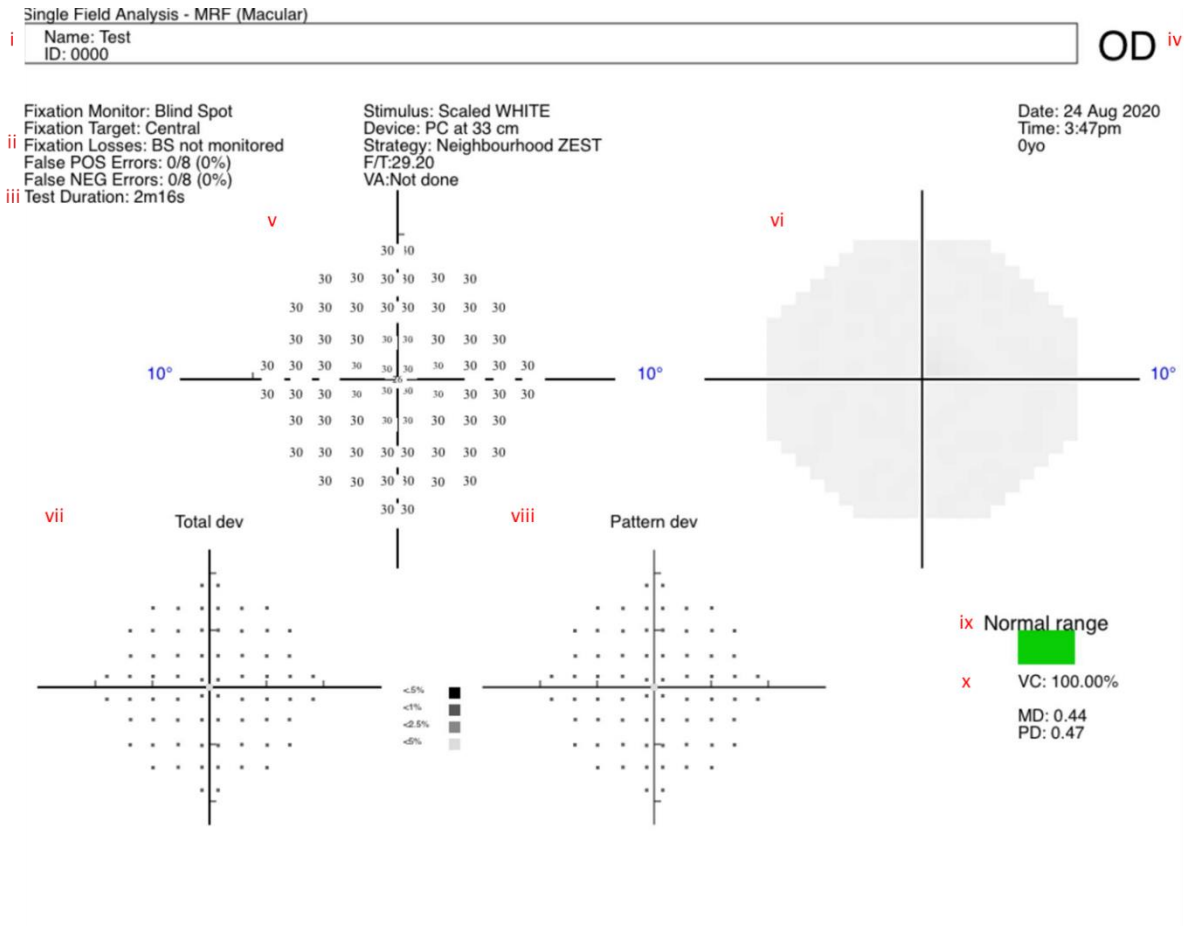


Figure 23. The 10-2 visual field printout.

Elements of the visual field printout are given below:

i. Patient details

ii. Reliability indices

iii. Test duration

iv. Eye tested

v. Numeric plot

vi. Gray scale

vii. Total deviation

viii. Pattern deviation

ix. Normative indicator

Normal

Borderline

Abnormal

x. Global indices

9.6.3 Progression analysis

See section 9.10 (Progression analysis) for more information.

9.7 Low luminance low contrast acuity test

1. Ensure the patient has been set up according to the instructions provided in section 6 (Setting up the patient) and occlude the non-testing eye
2. Click on 

or 

to start the test (Figure 24)

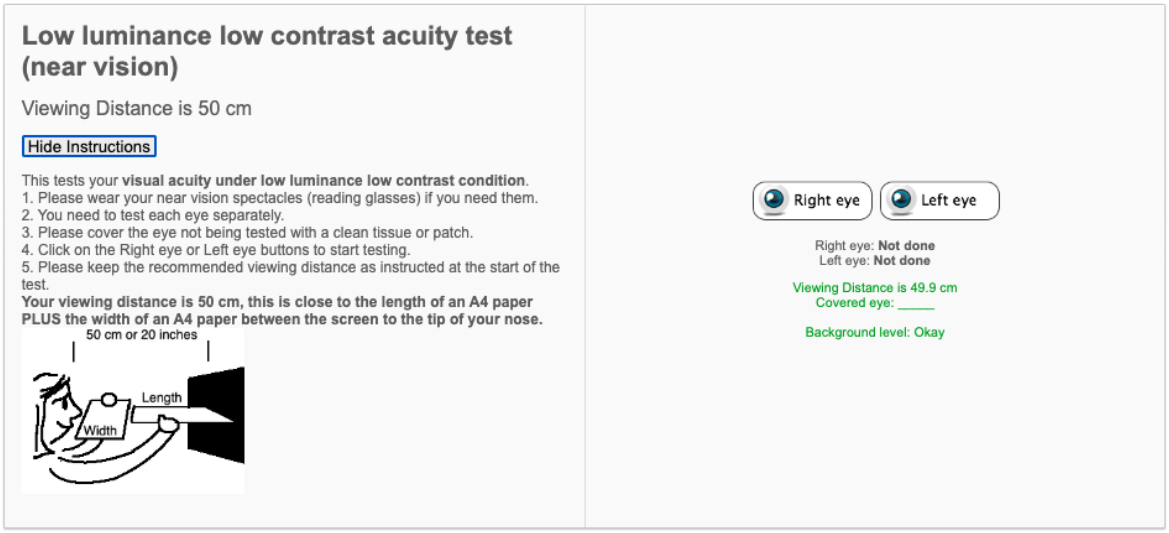


Figure 24. Step 5: Low luminance low contrast acuity test.

5. A tumbling E in a random orientation is presented to the patient in the middle of the screen (Figure 25)
6. Instruct the patient to click on the tumbling E (decreased luminance, low contrast background) at the bottom of the screen that corresponds to the orientation of the target. The target will get progressively smaller.
7. If the patient is unsure, they may click on the blue question mark

8. At the completion of the test, the user will be returned to the MRF Vision System dashboard

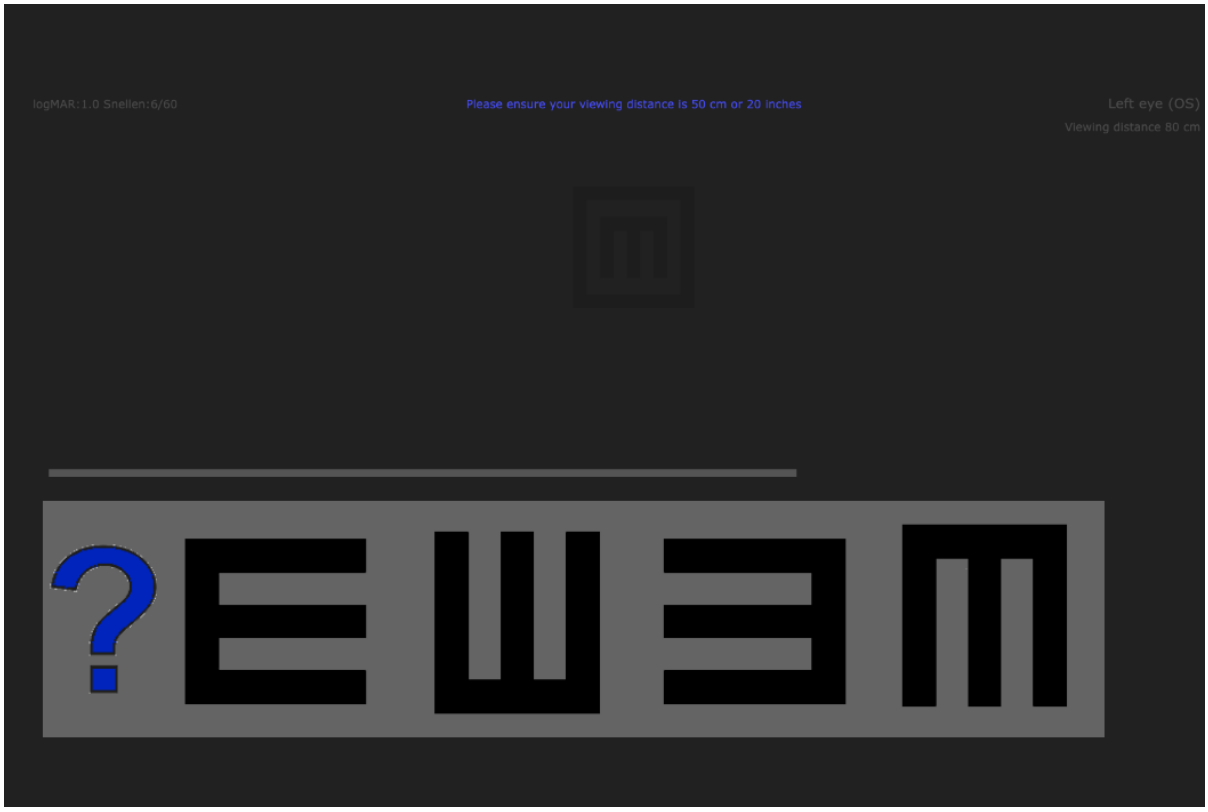


Figure 25. The low luminance low contrast visual acuity task.

9.8 Visual field test (30-2)

9.8.1 Performing a visual field test (30-2)

1. Ensure the patient has been set up according to the instructions provided in section 6 (Setting up the patient) and occlude the non-testing eye
2. Click on 

or 

to start the test (Figure 26)

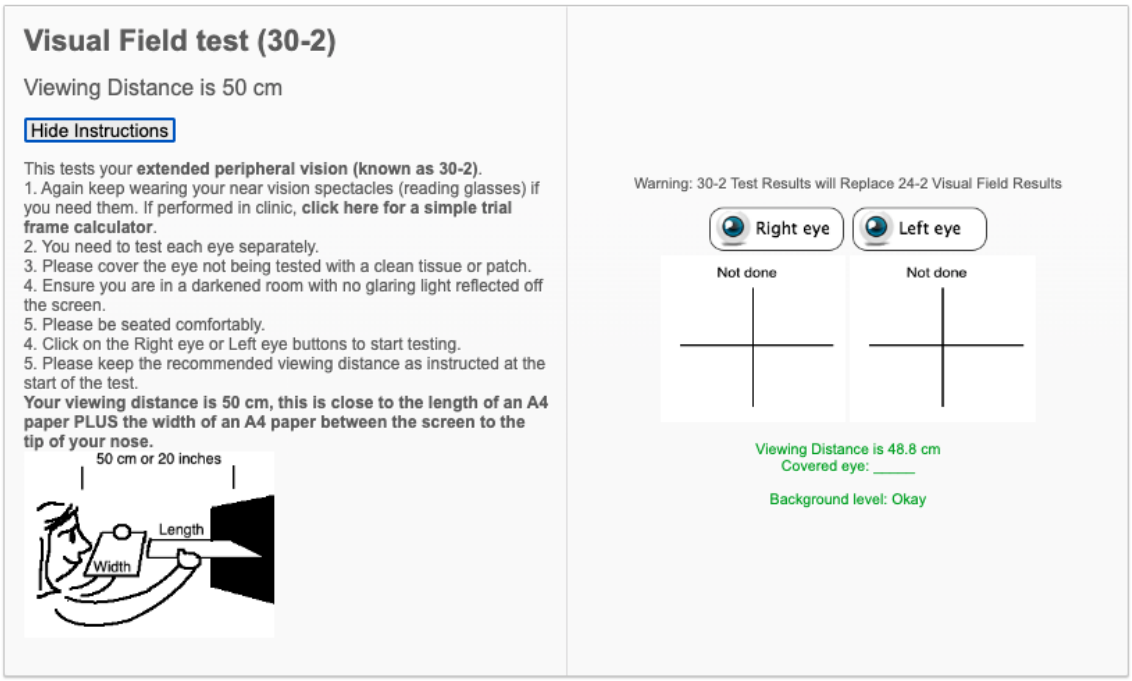


Figure 26. Step 6: The visual field test (30-2).

3. Instruct the patient to always fixate at the red cross during testing (Figure 27). The red cross may change positions during testing.
4. Each time a grey or white dot is flashed in their peripheral vision, the patient must:
    a. click on the brown 'response box' (see Figure 27) with the mouse pointer, or;
    b. tap the space bar

    Note: An audible click will sound each time the patient registers a response
5. Click on the box or tab the space bar to start the test
6. At the completion of the test, the user will be returned to the MRF Vision System dashboard
7. The test may be paused by clicking on the red cross

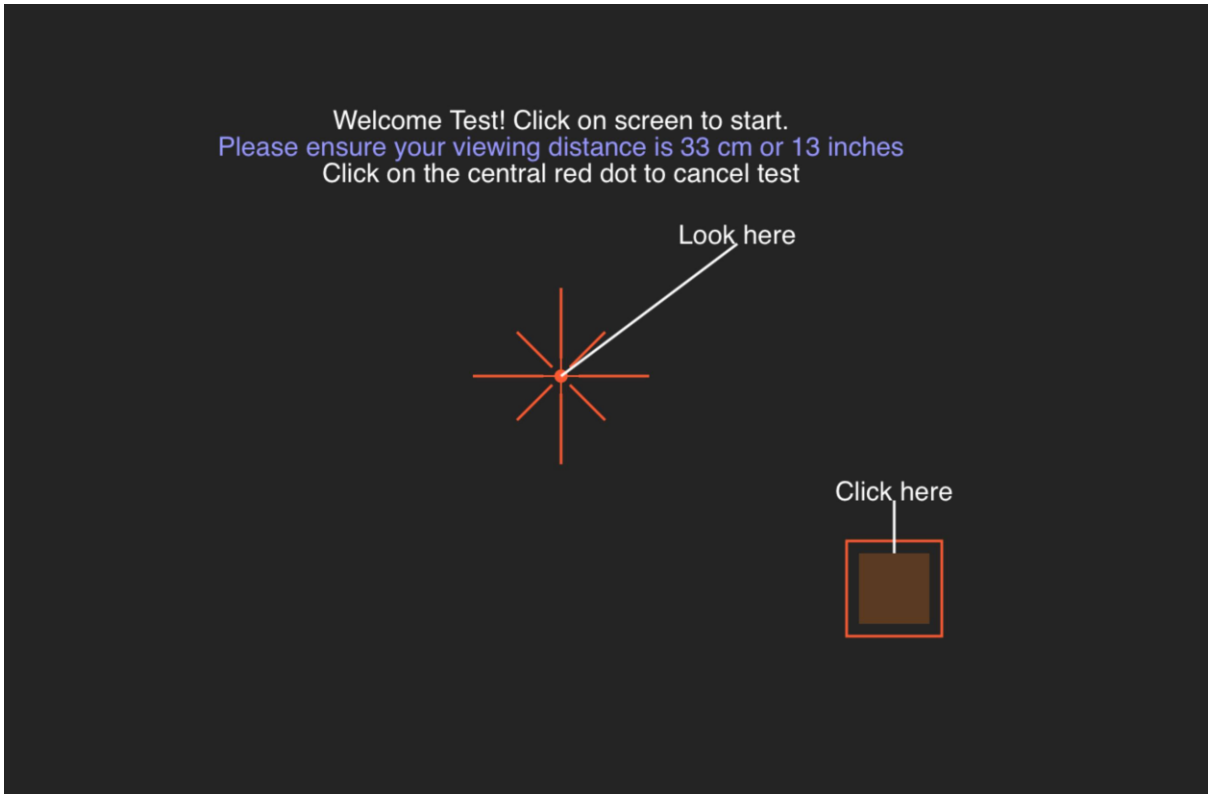


Figure 27. The visual field task (30-2).

9.8.2 Visual field test (30-2) results

An example of the visual field (30-2) output is given in Figure 28.

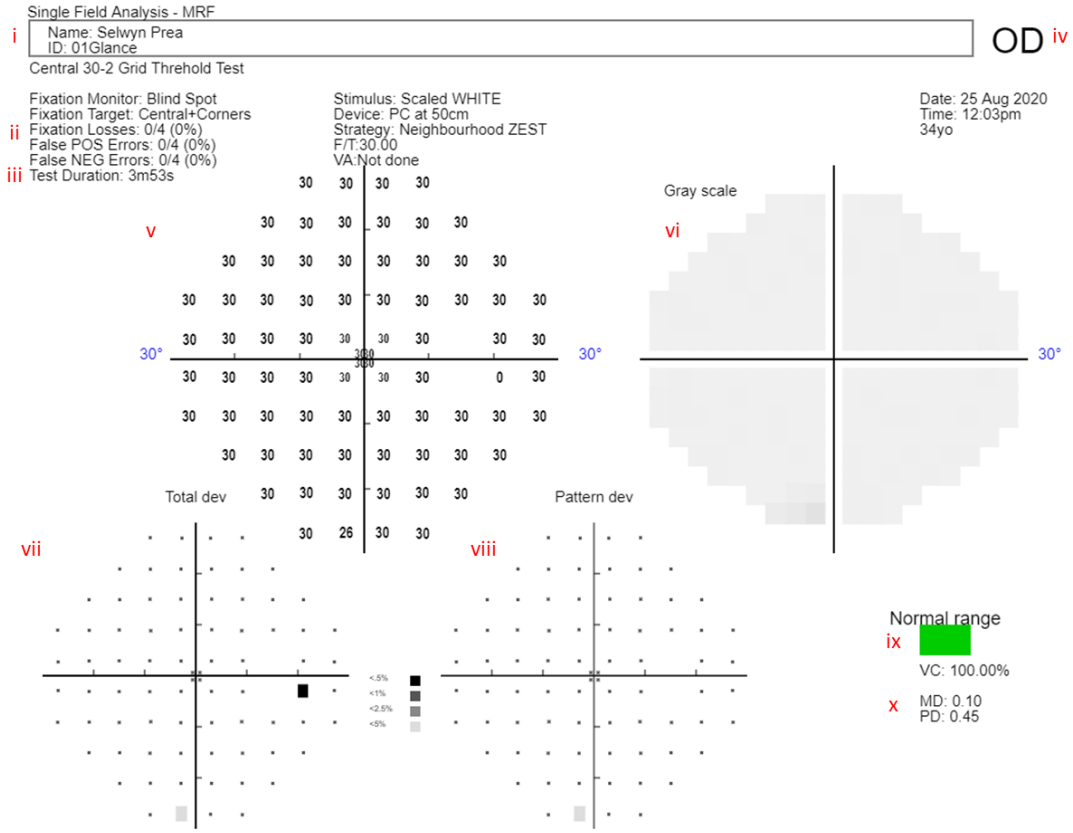


Figure 28. The 30-2 visual field printout.

Elements of the visual field printout are given below:

i. Patient details

ii. Reliability indices

iii. Test duration

iv. Eye tested

v. Numeric plot

vi. Gray scale

vii. Total deviation

viii. Pattern deviation

ix. Normative indicator

Normal

Borderline

Abnormal

x. Global indices

9.8.3 Progression analysis

See section 9.10 (Progression analysis) for more information.

9.9 Binocular Esterman (Equiv.) field test

9.9.1 Performing a binocular Esterman (Equiv.) field test

1. Ensure the patient has been set up according to the instructions provided in section 6 (Setting up the patient) and occlude the non-testing eye
2. Ensure that the computer screen has brightness of 300 nits with a minimum diagonal screen size of 27”
3. Click **on Both Eyes Button** to start the test (Figure 29)

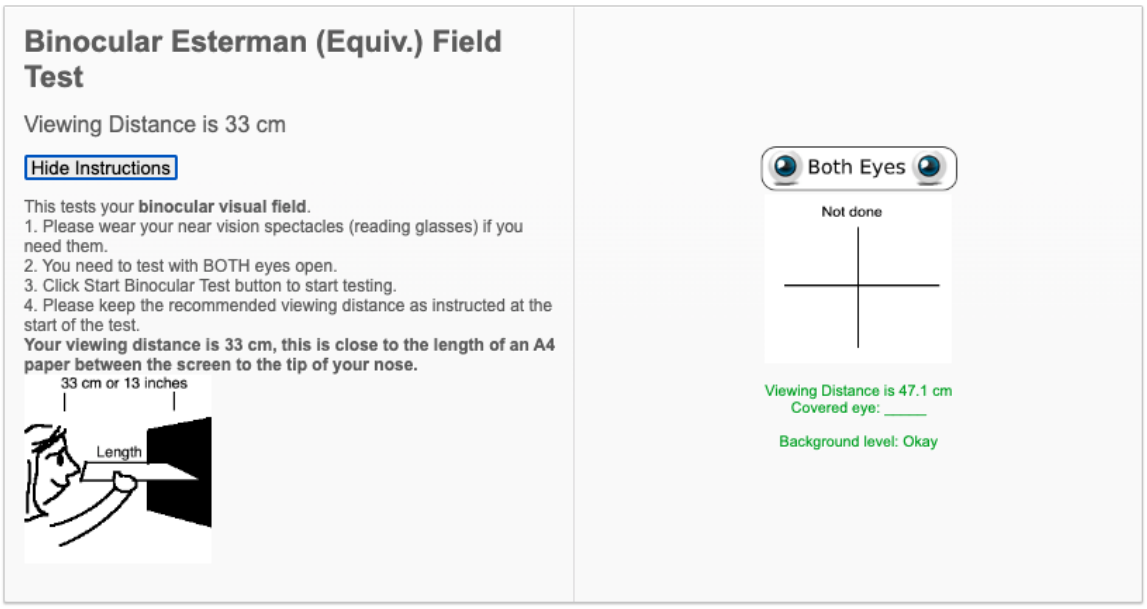


Figure 29. Step 6: The binocular Esterman (Equiv.) field test.

4. Instruct the patient to always fixate at the red cross during testing (Figure 30).

5. If a larger screen is used for the binocular test than 27 inch screen, user can click on Move farther to a attempt performing the binocular test at a more comfortable farther distance.
6. Each time a grey or white dot is flashed in their peripheral vision, the patient must:
    a. click on the brown 'response box' (see Figure 30) with the mouse pointer, or;
    b. tap the space bar

    Note: An audible click will sound each time the patient registers a response
7. Click on the box or tap the space bar to start the test
8. At the completion of the test, the user will be returned to the MRF Vision System dashboard
9. The test may be paused by clicking on the red cross
10. The user may cancel the test by clicking on the X in the upper left corner of the screen

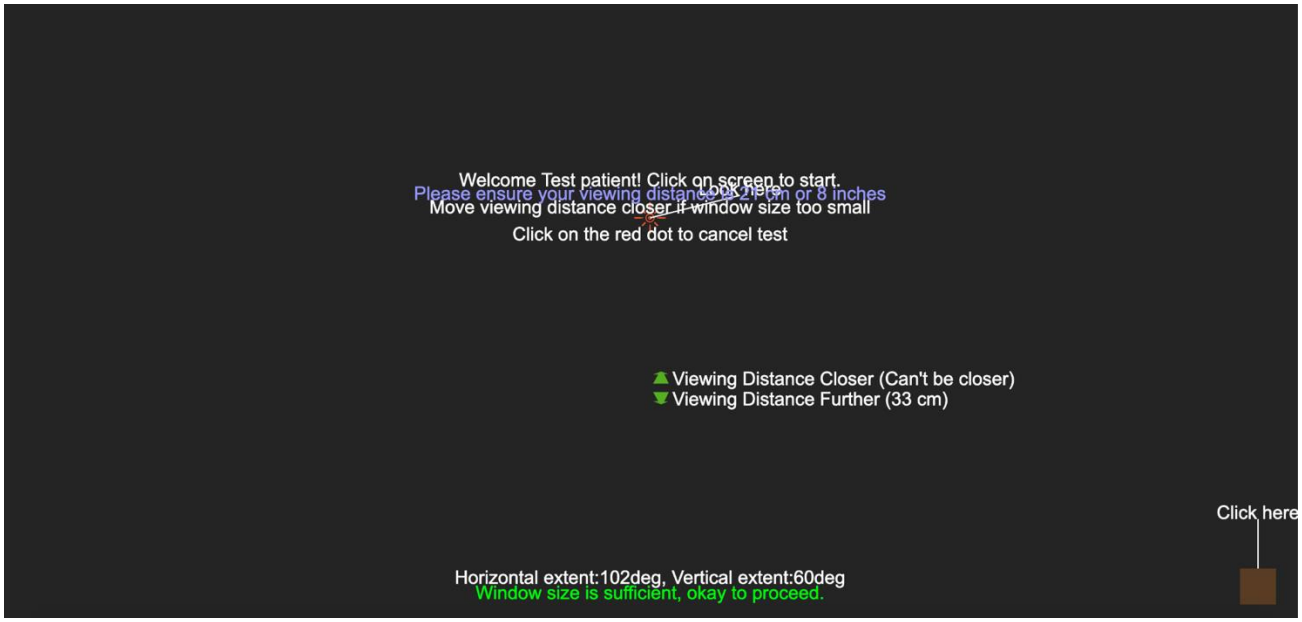


Figure 30. The binocular Esterman (Equiv.) visual field task.

9.9.2 Binocular Esterman (Equiv.) visual field test results

An example of the binocular Esterman (Equiv.) visual field test output is given in Figure 31.

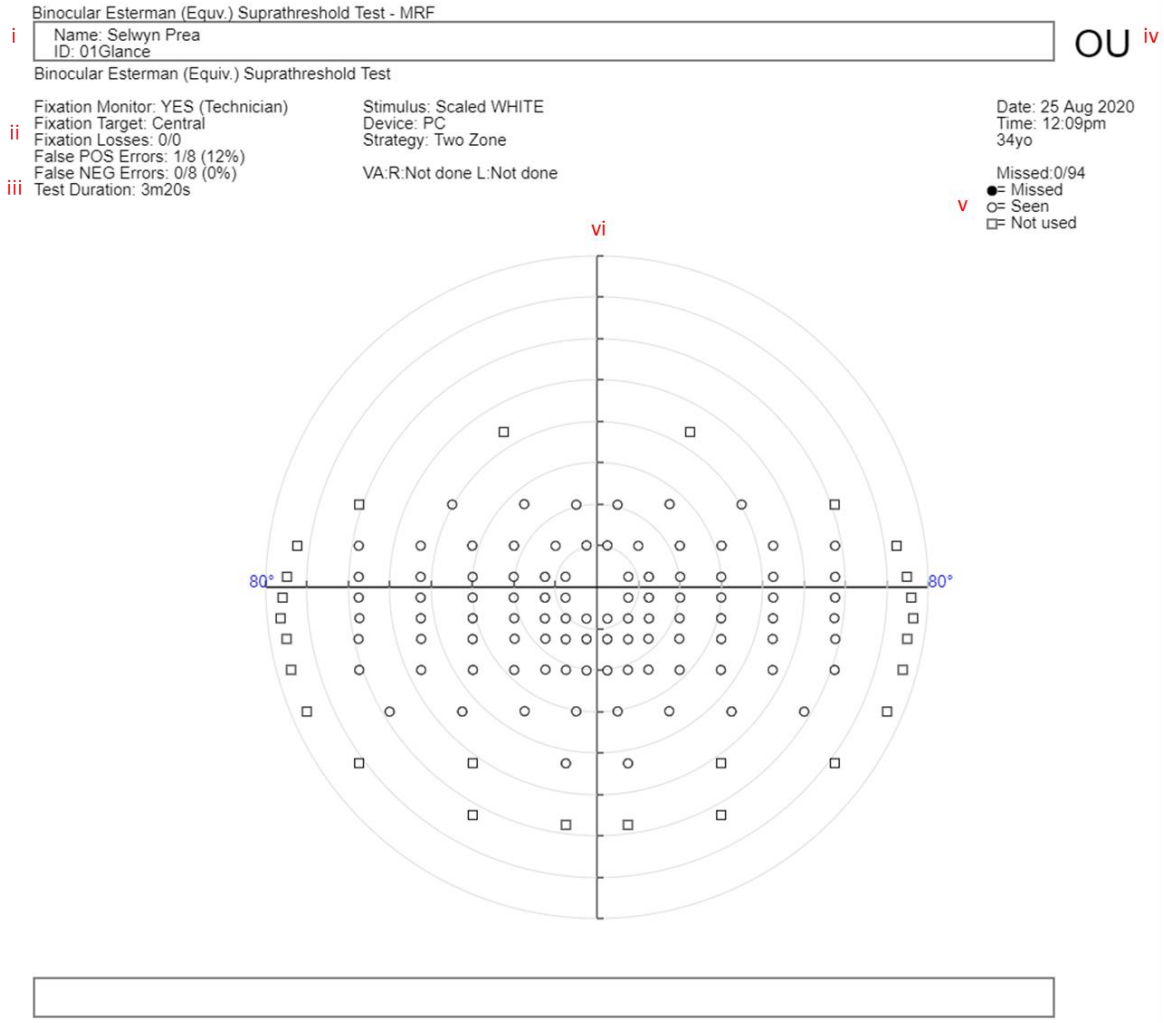


Figure 31. The binocular Esterman (Equiv.) visual field test printout.

Elements of the visual field printout are given below:

i. Patient details

ii. Reliability indices

iii. Test duration

iv. Eye tested

v. Number of points seen/missed

vi. Visual field plot

9.10 Save Test Section

Once all the desired vision tests have been completed, the user must click “Save this episode” to save all test results (Figure 32).

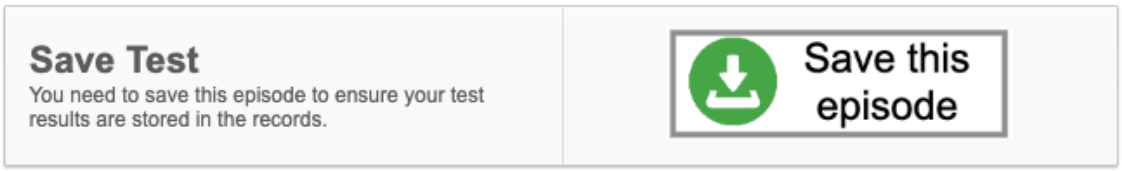


Figure 32. Step 8: Save Test.

9.11 Progression Analysis

Progression analysis is available for the MRF in the Patient accounts section. The progression indicator is displayed on the results screen if at **least 5 exams** have been performed. MRF Online displays the patient's mean defect (MD) progression trend for the left and right eyes. A minimum of 5 exams is required for the progression trend to be calculated and displayed. An example of a progression trend for a patient's left eye is shown in Figure 33.

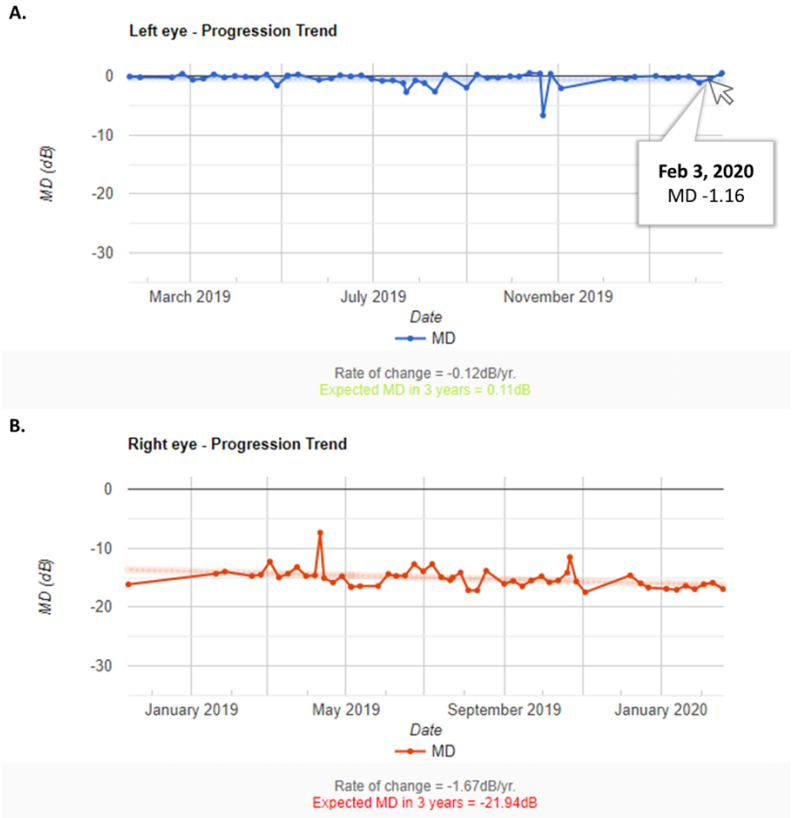


Figure 33. Example progression trends. A. Left eye progression trend for a normal eye. Note that hovering over a data point displays the date and MD for that test. B. Right eye progression trend for a glaucoma eye.

The x-axis for the progression trend graph (Figure 33) displays the time (month, year) and the y-axis represents the MD (dB). Note that a regression line is fitted through the data points. The rate of change is given as a value in dB/yr and the expected MD in 3 years is shown in dB.

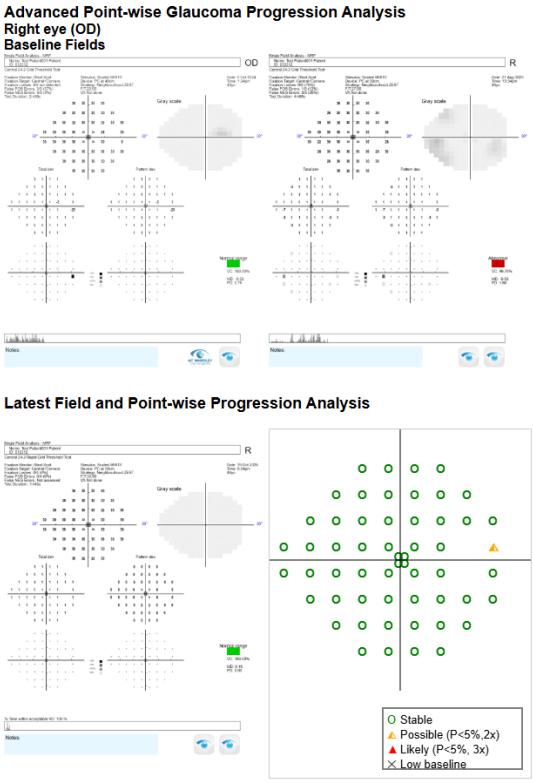
Different Trend analysis can be displayed by selecting the corresponding link underneath the first trend analysis graph:

1. PD Progression – Show graph of Pattern Deviation trend
2. VC/VFI equ progression – show graph of Visual capacity (%) trend
3. Regional analysis Central MD progression - show progression of MD calculated from the central region
4. Regional analysis MD progression inf MD - show progression of MD calculated from the inferior region
5. Regional analysis MD progression sup MD - show progression of MD calculated from the sup region

Regional analysis provide more detailed analysis of the regional progression of visual field compared to overall MD trend analysis. However it is more robust to variabilities compared to point-wise event type analysis.

Point-wise analysis

In the patient page, click on **Point-wise Progression Analysis** button. Point-wise will be displayed if more than 3 threshold visual field tests have been performed.



In the point-wise map, a green circle means the point is stable. Orange triangle means possible progression (Baseline threshold lower than average baseline thresholds with P<5%,2 times). Red triangle means likely progression (Baseline threshold lower than average baseline thresholds with P<5%, 3 times).

9.12 Telehealth

MRF Online offers users the option to undertake vision testing on patients via telehealth. This function is particularly useful when the patient cannot visit the doctor's practice in person. Prior to commencing a telehealth consultation, the user must do the following:

1. Generate a doctor code (see section 4.2 Generate doctor code)
2. Ensure that the patient has access to a device that meets the minimum system requirements to run MRF Online (see section 2.1 Compatible hardware and software)
3. Ensure the patient's device has speakers and that the volume is turned up
4. Provide instructions to the patient to ensure that they are set up correctly (see section 6. Setting up the patient).

To perform vision testing on a patient using MRF Online's telehealth function, the user should do the following:

1. Log in to your MRF Online account (see section 3.2 Logging in to your account)

2. If the patient is a new patient, click Add Patient to create a new file (see section 4.6 Add patient). If the patient is an existing patient, search for their file in the Patient List (Figure 2 xii).
3. Click on the patient's unique ID to enter the patient account screen
4. Click **Topup** to add a test to the patient's account (Figure 9 viii)
5. Click **Edit Tests** and select the vision tests you wish the patient to perform (see section 5.2 Edit tests (telehealth))
6. Copy the simplified telehealth URL by clicking Copy to clipboard
7. Send the simplified telehealth URL to the patient (eg: via email)
8. Alternatively by pressing **Send Invite to Email** button user can send an invitation with the unique Telehealth URL to the patient's email address on record.
9. Ask the patient to access the URL. They will see the following screen:

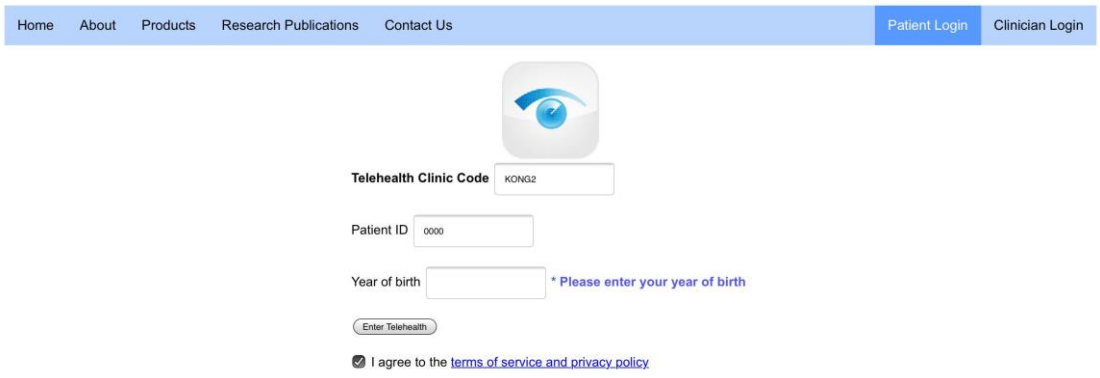


Figure 35. The patient login screen for vision testing via telehealth.

10. Ask the patient to enter their 4-digit year of birth and click Enter Telehealth
11. Ask the patient to click Start Test

12. Instruct the patient to calibrate their screen by clicking Start Calibration (see section 8.1 Step 1: Screen Calibration)
13. The vision tests selected by the user in step 5 will be displayed to the patient. Instruct the patient to perform each of the vison tests, maintaining the correct working distance as indicated by the voice over, and occluding the non-testing eye. Refer to section 8. The MRF Vision System for more information on each vision test.
14. Once all vision tests have been successfully completed, ask the patient to click

    Save this episode

    The telehealth session is now complete. The user may review the patients results from the patient account screen.

10. Case Studies

10.1 Testing at the bedside

PRESENTATION

- 73-year-old female admitted to hospital with 3-week history of frontal headache and blur on left side
- Visual acuity and visual field testing performed at bedside with the MRF on an iPad

CLINICAL FINDINGS

- Visual acuity 6/18 OU (pinhole to 6/12)
- Dense superior bitemporal visual field loss (Figure 36) with MRF (confirmed with HFA 2 days later)
- MRI identified mass in pituitary region

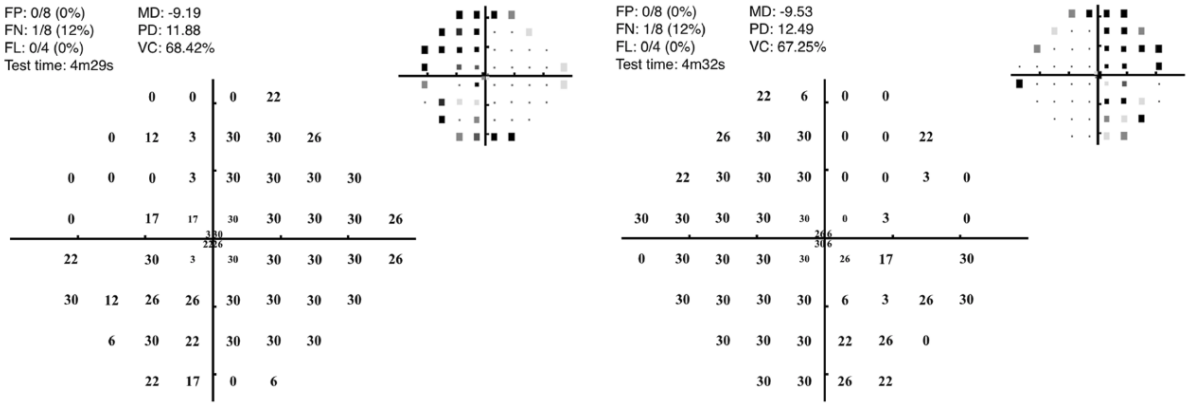


Figure 36. MRF visual field test performed at bedside showing bitemporal visual field loss.

INTERVENTION

- Neurosurgical removal of pituitary mass
- Two weeks after surgery, visual acuity improved to 6/4 OD and 6/5 OS
- MRF visual fields vastly improved (Figure 37)

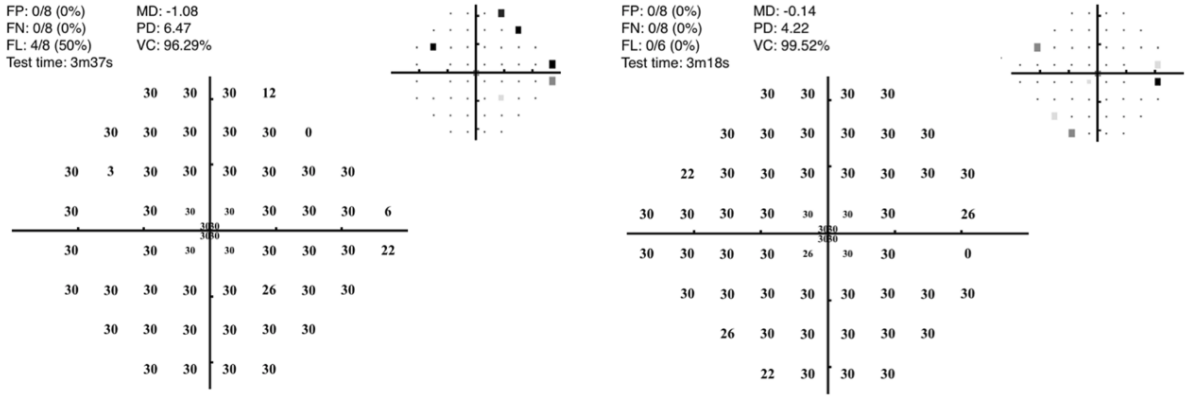


Figure 37. MRF visual field test performed 2 weeks after surgery showing vastly improved results.

10.2 Telehealth in action

PRESENTATION

- 68-year-old female with 3-month loss of vision in upper visual field
- Concerned about contracting COVID-19, did not want to come into clinic unless necessary

- Visual acuity and 24-2 visual field tests ordered via telehealth with MRF Online

Clinical Findings

- MRF visual acuities were 6/4.8 OD and 6/19 OS
- Visual fields were normal OD but a superior scotoma that crossed the vertical midline was observed OS (Figure 38)
- Patient was instructed to attend clinic where dilated fundus examination revealed an inferior retinal detachment OS

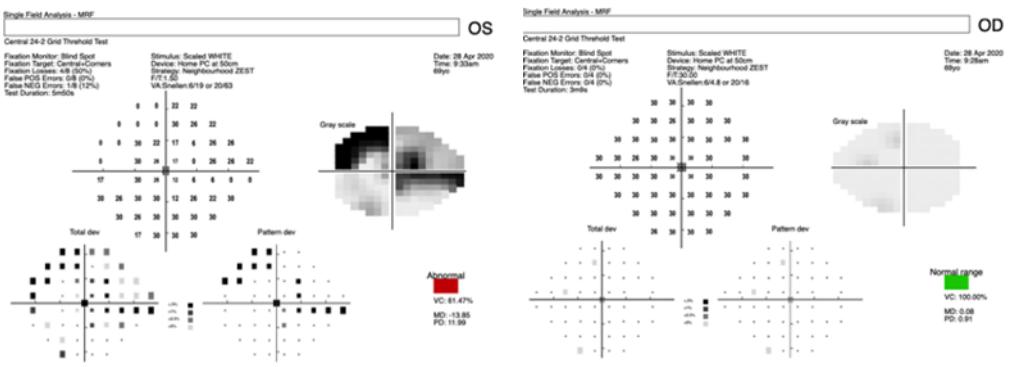


Figure 38. MRF Online 24-2 visual field test showing superior defect that crosses the midline in OS.

Intervention

- Urgent referral to retina specialist

10.3 Self-monitoring for progression

Presentation

- 59-year-old female with uveitic glaucoma OU
- Prescribed MRF to monitor her visual fields on a weekly basis using an iPad at home

Clinical Findings

- Progression analysis returns a flat slope for the linear trend OD (Figure 39)
- Abnormal MD (-19.8 dB) observed in OS confirming the presence of glaucoma and shows a significant downward trend (-2.1 dB/yr)

- Change was identified in 4 months, well before the next scheduled clinical review which was due 2 months later

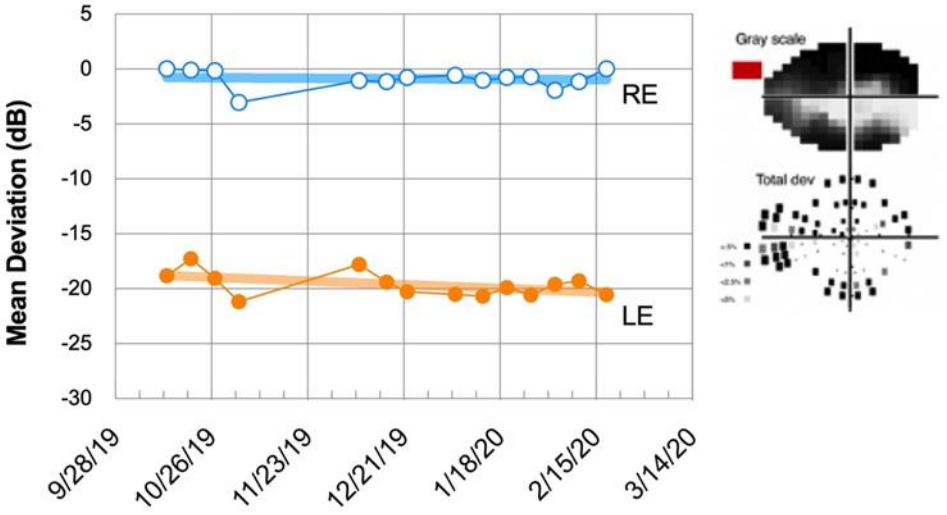


Figure 39. A 4-month time series returned by a patient having unilateral glaucoma who self-monitored using an iPad at home.

INTERVENTION

- Patient called in to clinic early for medical treatment of a uveitic episode

11. How test results are to be used

The MRF Perimeter produces quantitative measures of visual field sensitivity and acuity, presented in numerical plots, grey scales, deviation maps, global indices, and progression analyses. These results are intended to support, but not replace, a full clinical examination.

Interpretation of Results

- **Interpretation of Results should only be performed by eye care professional (Ophthalmologist or Optometrist) with full qualification in eye care and with training in the interpretation of visual field tests.**
- Visual field printouts (24-2, 30-2, 10-2, Esterman) should be interpreted in conjunction with patient history, visual acuity, intraocular pressure, and optic nerve/retinal findings. **Visual field test results should never be interpreted by itself in isolation from all other clinical information.**
- Reliability indices (fixation losses, false positives, false negatives, test duration) must be reviewed to determine validity.

- Progression analysis (MD slope, Pattern Deviation trend, regional indices) requires at least 5 reliable tests before meaningful interpretation.
- Test artefacts (e.g. poor fixation, incorrect occlusion, screen glare, or short test duration) can mimic or mask pathology and should be excluded.

Limitations

- Results are not intended for standalone diagnosis. They must be integrated with broader clinical assessment.
- Home-based test results may be more variable; clinicians should confirm significant changes with in-clinic testing where possible.
- The device does not replace standard of care investigations such as OCT, fundus photography, or HFA when indicated.

Responsibilities of the Eye-Care Professional

- Ensure appropriate patient selection (≥18 years or supervised paediatric use).
- Validate test conditions and reliability indices prior to interpretation.
- Determine clinical significance of results and communicate findings to the patient.
- Document outcomes in the medical record and determine the need for follow-up or modification of treatment.

List of Test Module Variants

Test Protocol	Field Area Assessed	Stimulus Parameters	Typical Clinical Use / Indication
MRF 24-2 Threshold	24° vertically × 30° horizontally from fixation	Static threshold stimuli	Standard visual field testing; used commonly in glaucoma, neurological disease affecting central and peripheral field; diabetic retinopathy (peripheral field defects)
MRF 30-2 Threshold	30° vertically × 30° horizontally from fixation	Static threshold stimuli	Extended glaucoma assessment; neurological field defects (e.g., hemianopia, quadrantanopia)
MRF 10-2 Threshold	Central 10° × 10°	Static threshold stimuli	Advanced glaucoma (central loss); macular disease (e.g., age-related macular degeneration); diabetic macular involvement
MRF Binocular Suprathreshold Screening	Central 20 ° x 120 °	Suprathreshold stimuli at set dB level above age-corrected normal	Binocular functional screening in community

Test Protocol	Field Area Assessed	Stimulus Parameters	Typical Clinical Use / Indication
MRF Radial pattern test	24° vertically × 30° horizontally from fixation	Static threshold stimuli	Legacy test pattern used prior to 2020 on MRF iPad app. Not marketed in EU/UK. This test pattern is discontinued.

12. Offline Mode

The **Offline Mode** allows users to perform **visual acuity** and **visual field testing** when Wi-Fi or internet connectivity is unavailable or unstable. In this mode, a limited version of the MRF software is saved locally in the browser's storage. This feature ensures testing continuity in remote clinics or field environments.

Key Differences from Online Mode

- **AI webcam features are disabled.** (e.g., gaze stability, eye coverage, and background brightness checks are not available.)
- **Only one test per patient** can be stored locally at a time.
- **No multi-language support**
- **Limited test credits:** the number of available tests is based on the user's account at the time of last online login.
- **Data upload required:** test results must be uploaded once internet connection is restored.

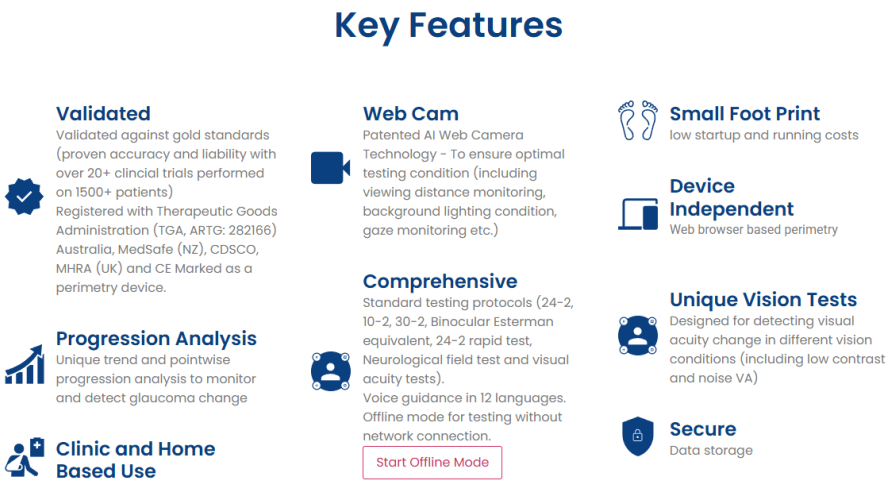
Prerequisites

Before using Offline Mode:

- The user must have logged in to their **online MRF account** at least once to record their available test credits in the browser's local storage.
- Ensure sufficient device storage and stable power supply for uninterrupted testing.

Downloading the Offline Mode

- Navigate to the official MRF website.
- Under the **Key Features** section, click the **Start Offline Mode** button.
- The button will display *"Downloading…"* while the offline module is being saved locally.
- Once the download completes, the button label will change to *"Offline Mode."*



Starting Offline Mode

1. Click **Offline Mode** to launch the offline testing environment.
2. The software will begin with **screen calibration**, following the procedure described in **Section 9.1** of this manual.
3. Create a new patient record by entering:
    - **Patient ID**
    - **First name**
    - **Last name**
    - **Date of Birth**
4. Select **Start Test**, then choose the desired protocol (e.g., *24-2*) and the **eye to be tested** (Right or Left).
5. Conduct the test as described in **Section 9** (*Testing Procedures*).
6. After completing a test, click **Return to Patient List** to begin testing another patient.

Testing can continue until all stored test credits are used.

Uploading Offline Records

When an internet connection is re-established:

1. Log in to your online MRF account.
2. Click **Upload Offline Records**.
3. Press **Upload** to start transferring stored test results to the cloud database.
4. When prompted to delete uploaded offline records, select **Delete** to free up local storage and avoid duplicate data.

Note: Users are strongly encouraged to upload offline data as soon as possible to prevent potential data loss due to browser cache clearing or system updates.

13. Support

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Victoria 3000

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Website: www.visioninhome.com www.visioninhome.au
Email: info@glance-optical.com

Australian Representative
To purchase a pack of MRF tests, contact our distributor:
Designs for Vision (Paragon Care)
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Clayton, VIC 3168
Australia
Phone: +61 (0) 427 533 343
Website: www.dfv.com.au
Email: cameron.loveless@dfv.com.au

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The Glance Optical Pty Ltd UK Responsible Person Agreement, FRM-063 and Letter of Designation FRM-064 are retained within the QMS.

India Representative
For our India customers, please contact AppView Email:prakash@appviewmrf.com
AppView Site (www.appviewmrf.com)

Note: The information in this manual is true and correct as at August 2020. Glance Optical Pty. Ltd. reserves the right to alter this information at any time without notice.
Document created by Selwyn Marc Prea.

14. Glossary of terms

App	Application.
dB	Decibel.
iOS	Operating system of the Apple iPad.
MRF	Melbourne Rapid Fields
MRF tests	The subscription fee which enables a user access to perform a vision test with MRF. Testing of the R and L eyes will deduct one test from the patient's account.
Patient	The person who will be performing the test.
User	The person who will be administering the test (eg: Optometrist, Ophthalmologist, Doctor, etc).