



# FoCal

**Release 2.13**

Camera Calibrator and Analysis Software

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## Purpose of this Manual

This manual is intended to provide a basic overview and get you started with Reikan FoCal. It contains all the information you need to download, install, setup and run a calibration with the software.

We encourage you to use our comprehensive online content, linked at various sections of this manual. The online documents are continuously updated and expanded, driven by customer questions and queries, so if you have an issue, it's likely to be answered by having a look online.

## Manual Conventions

Reikan FoCal runs on Windows and Mac, and we've used a mix of screenshots throughout the manual. If there are any cases where the two platforms differ it will be clearly indicated.

## Online Help

The comprehensive online help is automatically linked within the software. Hitting the "?" key (so press SHIFT + "?") in many parts of the software will open the help to the appropriate page.

The main index for the help is available at <http://www.reikanfocal.com/help>.

The online QuickStart Guide – which is a step-by-step guide through download, installation and your first calibration (much like this manual) is available at <http://www.reikanfocal.com/quickstart>.

## How to use this manual

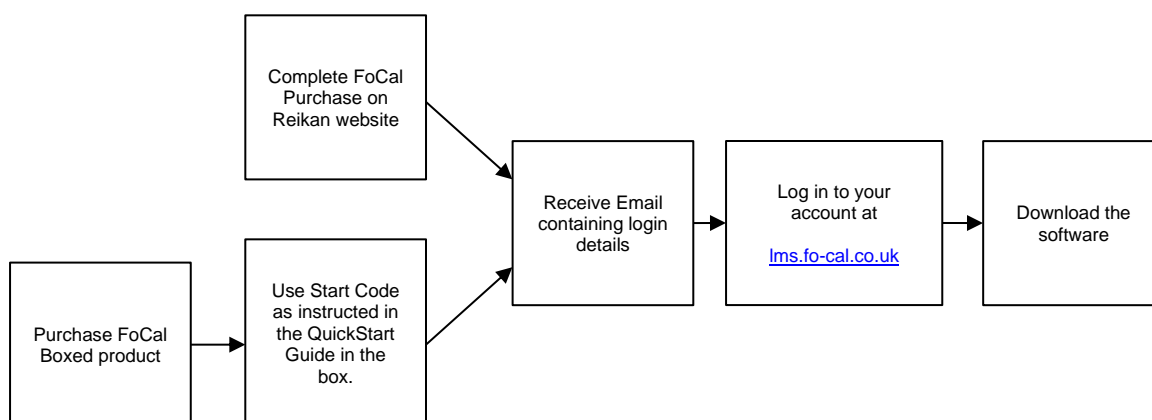
The manual is organised into the following sections:



## Download and Installation

### Downloading FoCal

In order to download FoCal, you must log in at [lms.fo-cal.co.uk](https://lms.fo-cal.co.uk).



If you have purchased FoCal from the Reikan website, you will have been sent an email which contains all the information you need to log in.

If you have purchased FoCal in a box from a retailer, follow the instructions supplied in the box to create your account and log in.

Once you log in, you will be able to download the latest version of FoCal. You also have options to download previous or pre-release versions of the software, purchase an extension to your license or update aspects of your license information.

### Installing FoCal – Windows

The downloaded file is a ZIP file which you must decompress (normally by right-clicking on the file and clicking **Extract All**).

In the file, you will see 3 directories:

- **Documentation** – contains software related documentation
- **Software** – contains the software installation files
- **Target Images** – contains the target image file to print

The file in the **Software** directory is supplied as a Windows setup package. To install, simply execute the `FoCal-xxx.msi` file and follow the instructions.

Once installed, the software will appear on the Start menu under **FoCal**, or you can just enter “FoCal” into the Windows search box (this can also be opened with Windows Key + Q)

### Installing FoCal – Mac

The downloaded file is a DMG file which you can open from Finder or by clicking on the downloaded file in your internet browser.

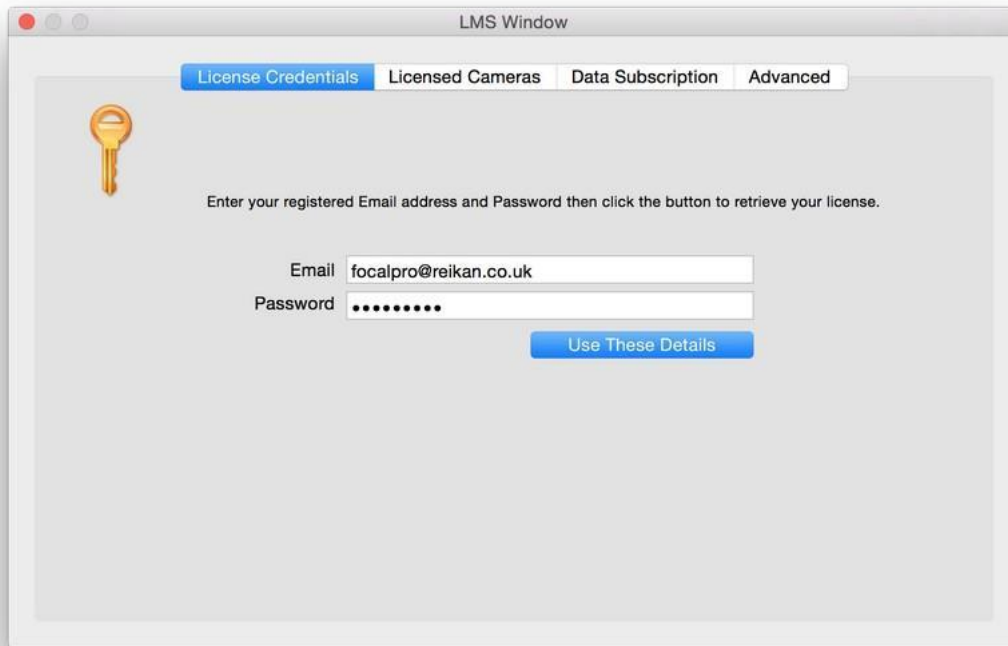


To install the application, just drag the FoCal icon to the Applications folder.

The documentation and Target Images are available from within this disk image also.

### Licensing

When you first start a brand-new install of FoCal, you will need to enter your license credentials. This is the same information you used to log in to the LMS in order to download FoCal in the first place.



Enter your email address and password into the boxes then click the *Use These Details* button. Your license will be applied to FoCal and the software will exit.

From now on, FoCal will start without requesting any license details.

## Getting Ready

There are a few steps you'll need to do in order to run your first calibration.

### Calibration Target

FoCal measures the focus quality of the camera and lens using a special image called the *calibration target* (or just *target* for short).

We recommend using a Hard Target from the Reikan FoCal Store (at [store.fo-cal.co.uk](http://store.fo-cal.co.uk)) - these are the same targets we use for all our development and testing of FoCal.

Alternatively if you want to get up-and-running immediately, you can print your own target using image files available from the website at <https://www.reikanfocal.com/documents.html>.

### Camera Setup

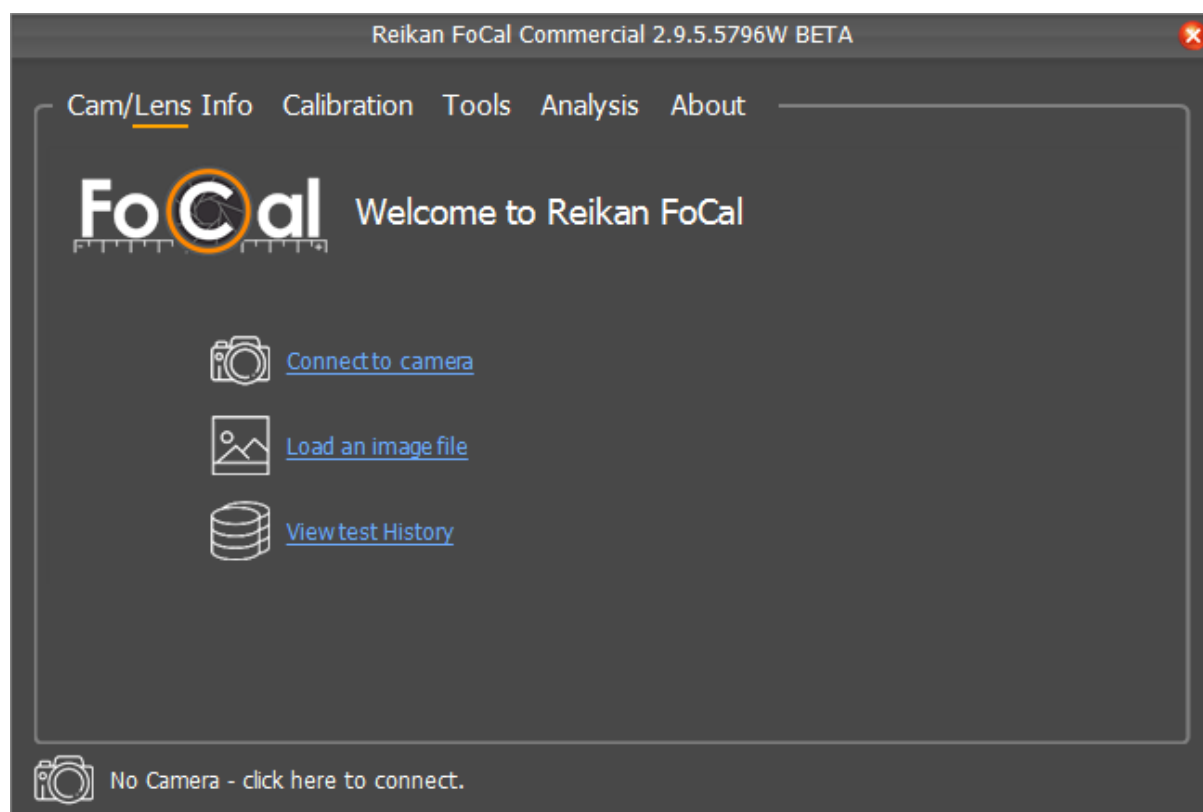
In order to ensure reliable calibration of your camera autofocus you will need to ensure your camera is stable and set up appropriately in a well-lit environment.

To help with this, there is a [FoCal Setup Checklist](#) which will cover everything needed.

### Start FoCal

The very first time you start FoCal you'll need to enter your license details.

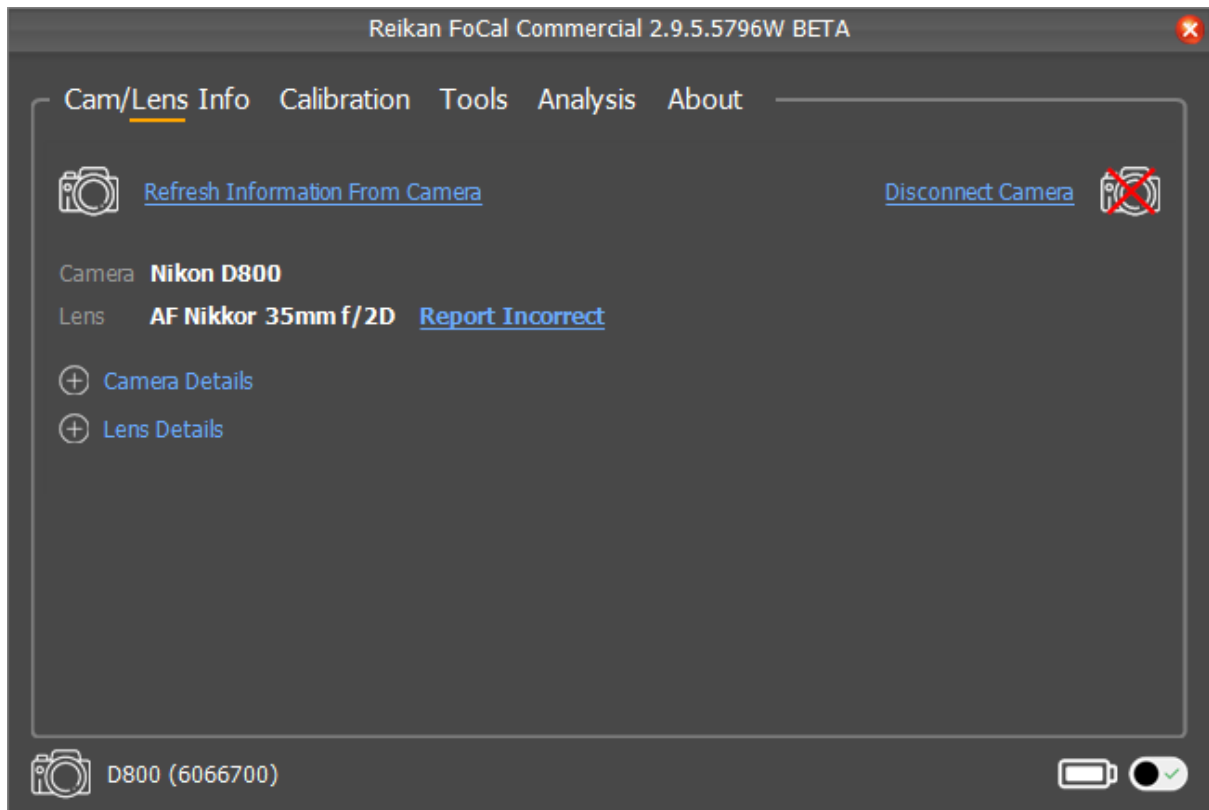
With your camera setup and connected as described in the FoCal Setup Checklist, choose *Connect to Camera*.



The first time you use a camera with FoCal it will be automatically added to your license.

FoCal will connect to your camera and retrieve information about your equipment:





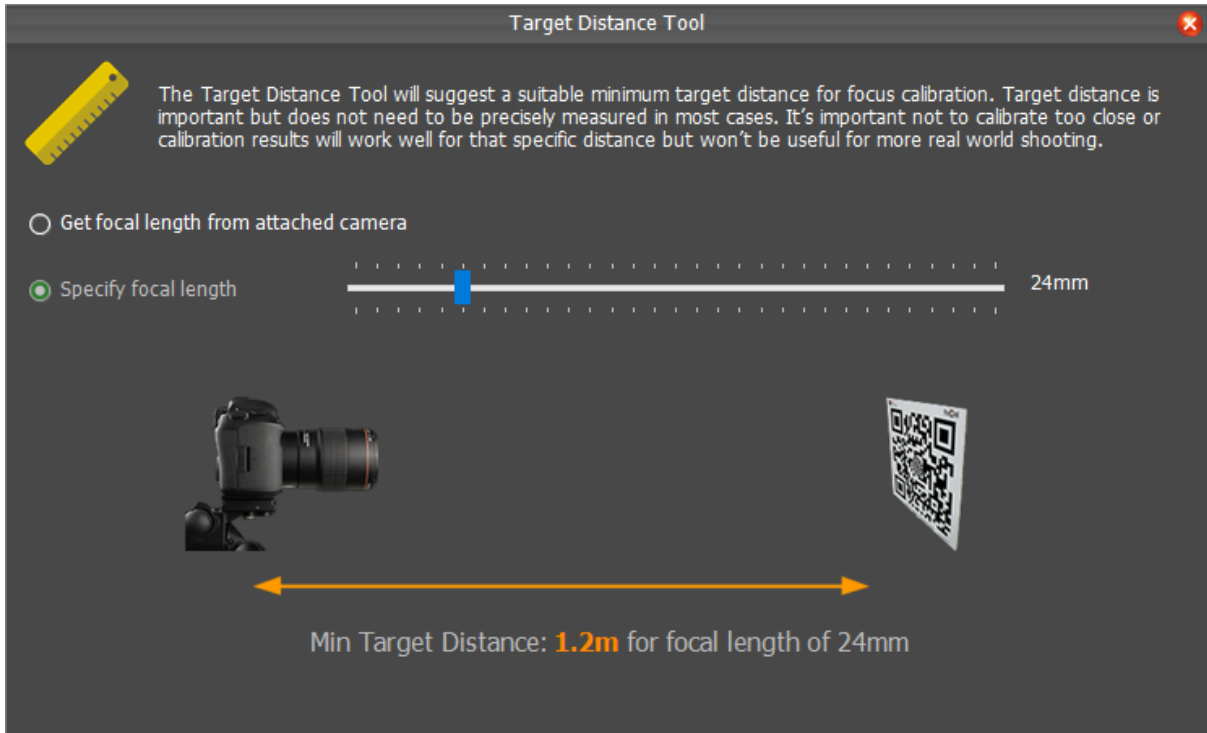
You can see more information about your camera and lens by clicking the *Camera Details* or *Lens Details* options.

### Target Distance Tool

The distance between the camera and the target is important as calibrating too close to the target can result in results that are not representative of real-world use. The FoCal Target Distance Tool will show you the correct distance to set your camera away from the target.

To open the Target Distance Tool, choose the Tools option on the main FoCal window, then the Target Distance Tool button.

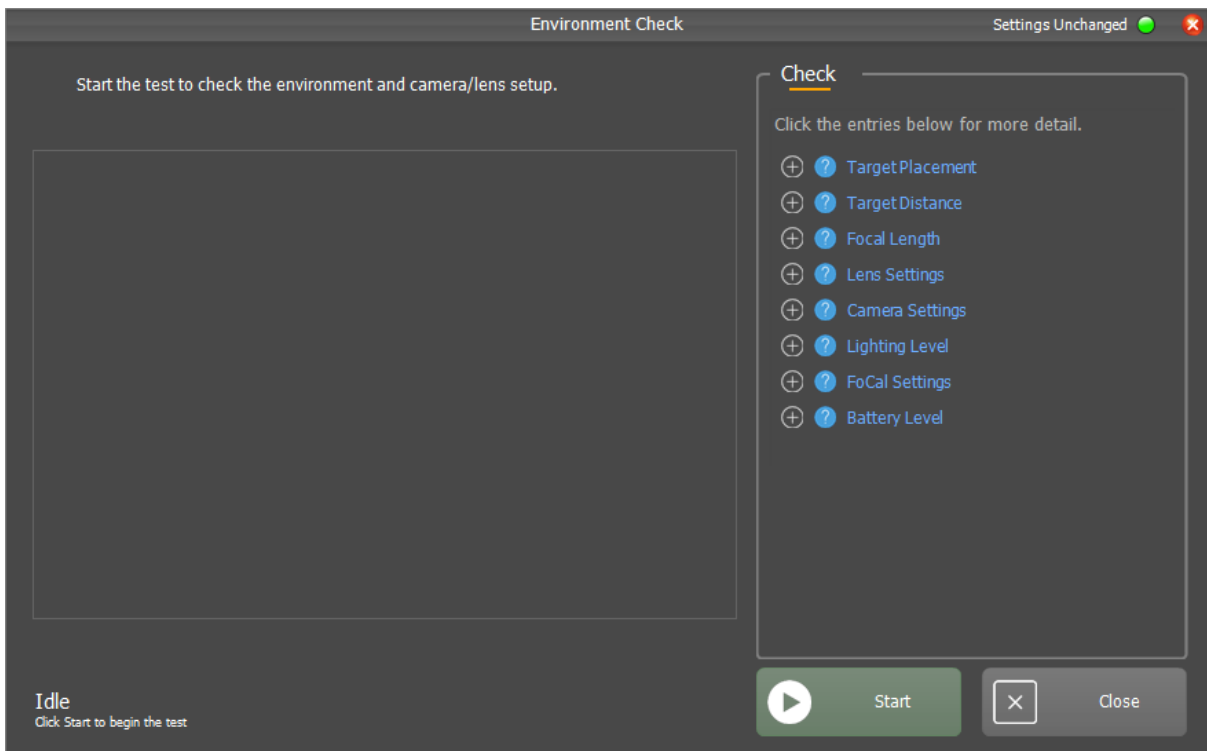
If you're attached to a camera, the information shown will be appropriate for the lens on your camera. Otherwise you can choose the focal length with the slider and see the appropriate distance.



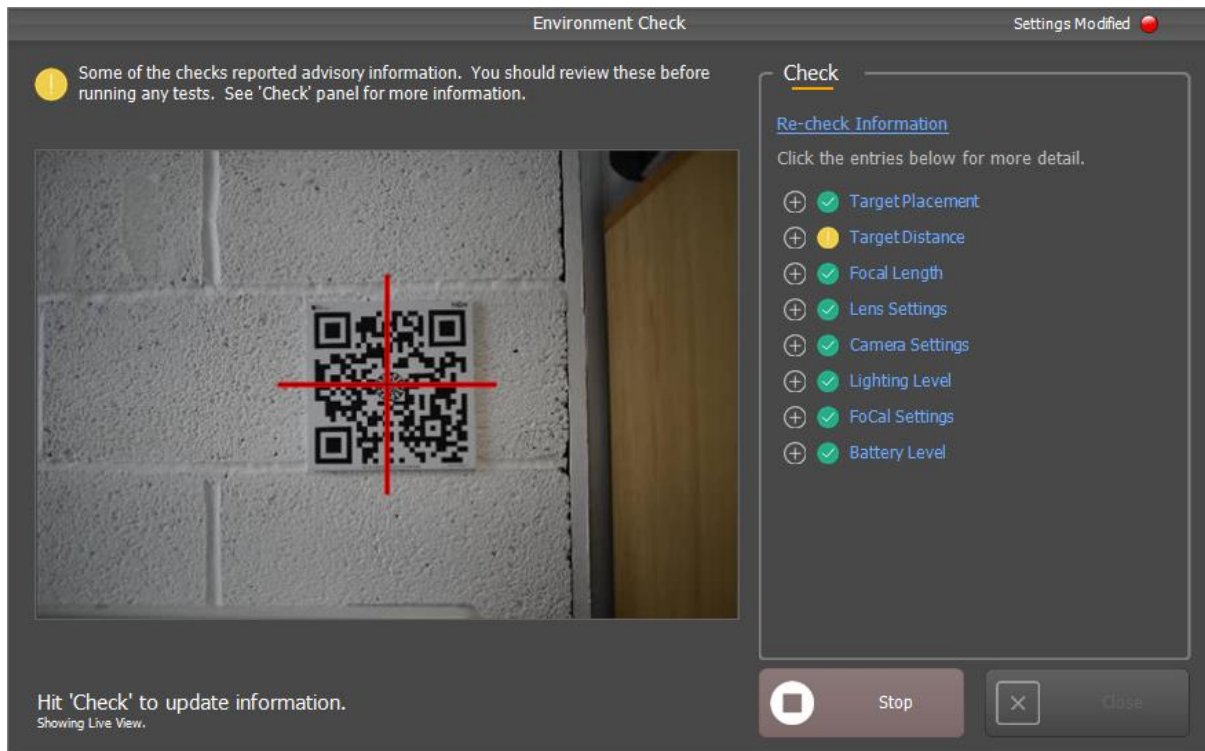
## Target Setup

The Target Setup tool in FoCal will run some quick basic tests and double check that everything is correctly set up for the calibration.

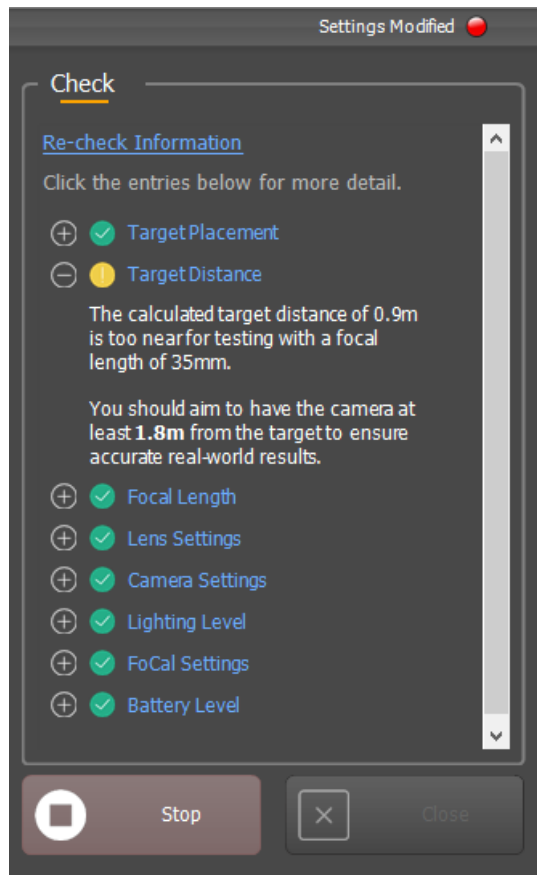
To use the Target Setup tool, choose the Tools option on the main FoCal window then the Target Setup button.



To run the checks, hit the Start button. FoCal will take a shot and show you anything that might need attention in the panel on the right of the window. You will also see a live view from the camera in the panel on the left.



In the example above, there is advisory indication shown against *Target Distance* in the *Check* panel. You can click this to see more information:



If you need to make any changes to the camera, tripod, lighting etc then do this and click the *Re-check Information* option at the top of the *Check* panel to confirm everything is OK.

When finished, hit the Stop button and close the window.

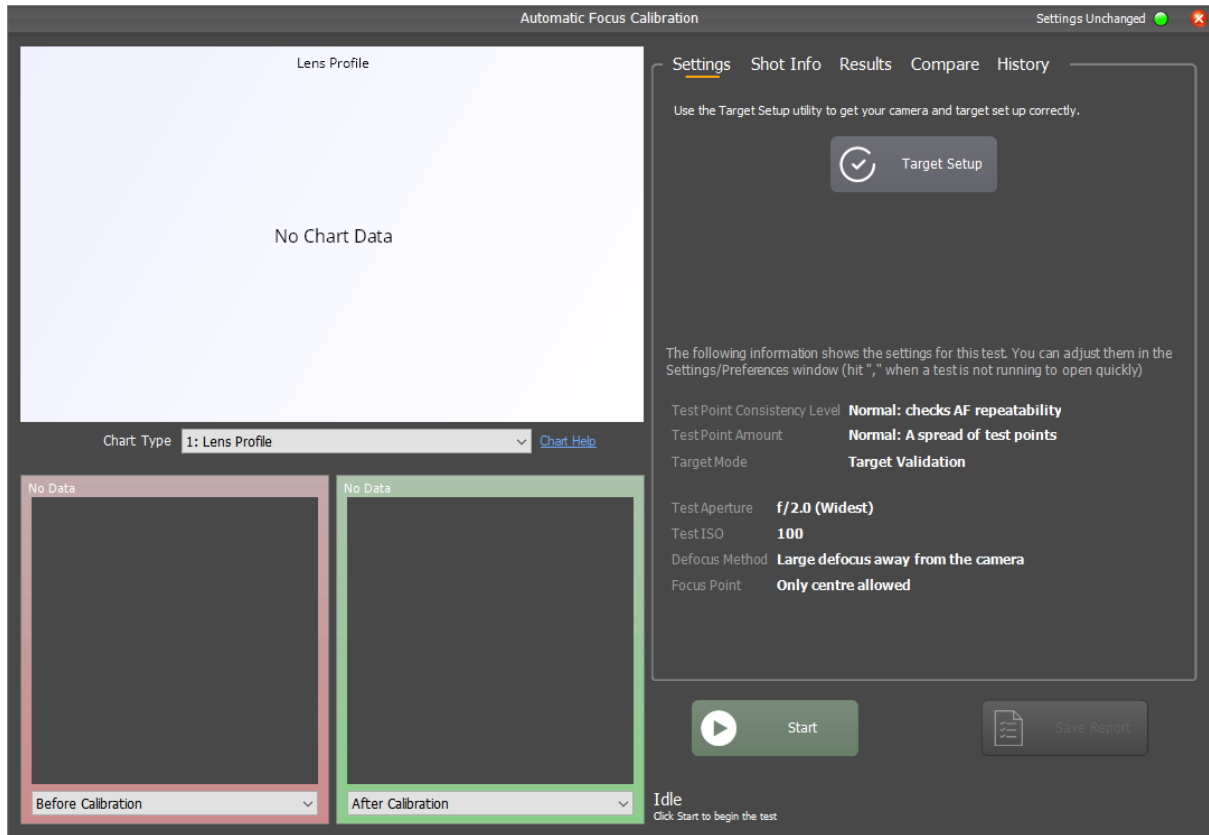
### More Information

For more details about the Target Setup tool and general setup for testing, see <http://www.reikanfocal.com/targetsetup>.

## Calibration

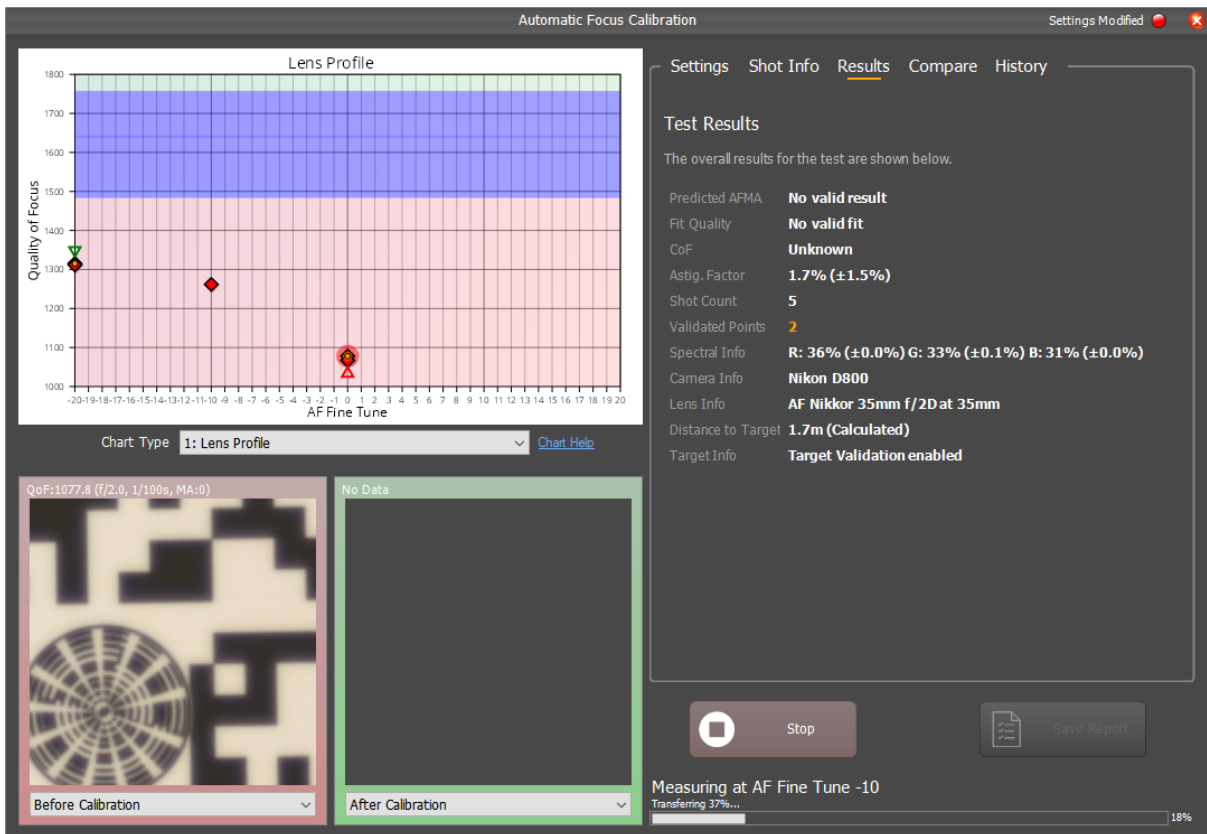
Once your camera is set up correctly and confirmed with the Target Setup utility, you're ready to calibrate your system.

In the FoCal application, choose Calibration and hit the Automatic Focus Calibration button.



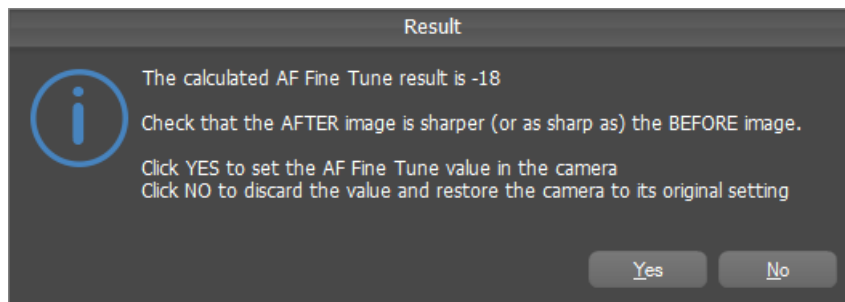
It is important to ensure the environment is correctly set up for a calibration by using the Target Setup utility. You should run the Target Setup utility before running tests or calibrations after any major change - for example moving the camera or target, changing lens, lighting changes etc. The Target Setup utility will confirm for you that everything is ready for the test.

Once you are confident the setup is correct, hit the *Start* button and FoCal will begin to calibrate your lens.

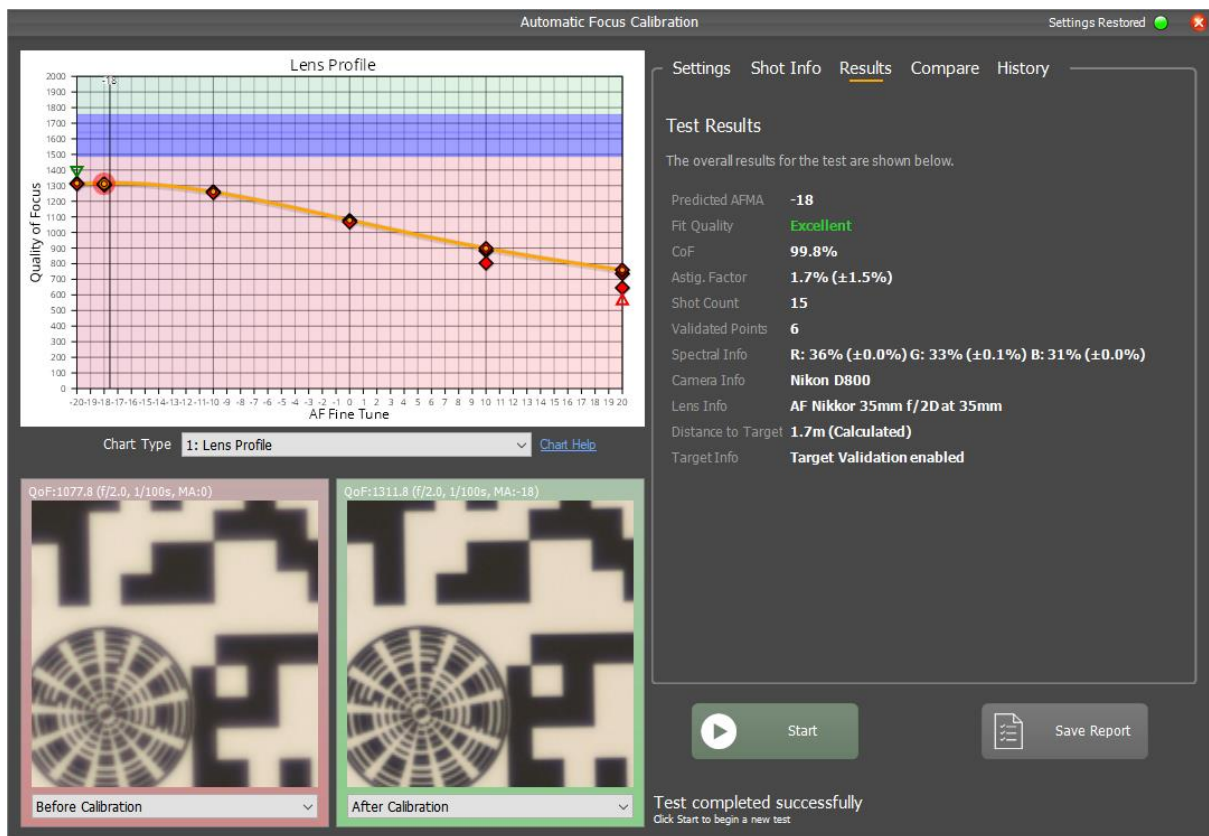


Depending on the type of camera connected (whether it operates in Hands Free Mode or User Assisted Mode), FoCal may periodically ask you to adjust a setting on the camera.

When the calibration is complete, you will see a message similar to this:



You will be able to see the *before* and *after* images on the main window - check that you are happy with the calibration and if so then hit *Yes* to set the value in the camera.



## Interpreting the Details Results

FoCal gathers a huge amount of information about your camera and lens as each test runs, and digging deep into the results can reveal some fascinating insights about how your system behaves.

This section is a very basic overview of the results and how to find out more info.

### Charts and Chart Help

The main chart - Lens Profile - shows you how the sharpness of your lens changes across the AF Microadjustment / Fine Tune range. Looking at the example above - horizontally the scale runs from -20 to +20, and the vertical scale is an indication of the sharpness of the image, so the higher a marker the sharper the image.

The calibration result - the best AF Microadjustment setting - will be where the image is sharpest. In the screenshot above, this is around -18, and is shown by the black vertical line.

The *Chart Help* text to the right of the chart list (underneath the chart) will take you to a web page giving you lots more detailed information about the chart you're looking at, so if you want to dig deeper you can click the link.

Note that charts other than Lens Profile are only available for FoCal Pro users.

### More Information

For lots more details and information about Automatic Calibration, see <http://www.reikanfocal.com/calibration>.

## Further Tests (FoCal Pro Only)

### Aperture Sharpness

The Aperture Sharpness test shows you how your lens performs across the aperture range. You can see how the sharpness changes, how diffraction affects the lens, whether your lens elements are correctly aligned through the measurement of astigmatism and image motion and much more.

With FoCal Comparison Data, you can see how all these parameters compare to other FoCal users, helping you determine if your lens is behaving as expected.

For lots more details and information about the Aperture Sharpness test, see <http://www.reikanfocal.com/aperturesharpness>.

### Focus Consistency

The Focus Consistency test automatically repeats autofocus operations a number of times, showing you how your camera and lens are behaving. You can look for anomalies in consistency, astigmatism, image motion and other measurements to check that everything is operating correctly.

As with other tests, FoCal Comparison Data can show you how all these parameters compare to other FoCal users, helping you determine if your lens is behaving as well or not so well.

For lots more details and information about the Focus Consistency test, see <http://www.reikanfocal.com/focusconsistency>.

### Dust Analysis

How dirty is your sensor, and does it matter? The FoCal Dust Analysis test automatically measures the impact of dust across the aperture range, using complex analysis to give you high confidence results and show you only spots that matter. A clear indication of affected apertures helps you decide whether you want to potentially risky step of cleaning your sensor, and Dust Perception Factor lets you see whether you're really likely to see any impact from them. Hot Pixel detection can show you whether there are any particularly concerning stuck pixels too.

For lots more details and information about the Dust Analysis test, see <http://www.reikanfocal.com/dustanalysis>.



## Getting Further Help

### Online Help

For further general information we encourage you to review the help information at <http://www.reikanfocal.com/help>.

### FAQ

There is an FAQ/Support site at [support.fo-cal.co.uk](http://support.fo-cal.co.uk) which may also help answer some questions you may have.

### Contact Support

If you can't find the answer you're looking for in the online help information, you can contact our support team at <http://www.reikanfocal.com/support>