



An Investigation into the Effects of Shutter Shock on Various Camera Models

Introduction

Shutter shock is the result of a cameras mechanical shutter sending vibrations through the camera body when taking a photo, which can cause a distortion in the final image. This issue is only caused by mechanical shutters since they contain moving parts. Therefore both electronic and electronic first curtain shutters (EFCS) will also be tested, although these methods of shutter also have their own issues.



The left image was taken using a full mechanical shutter, while the right image was taken with a fully electronic shutter.

Aim and Objectives

The aim of this project is to investigate the effects of shutter shock on the output image of cameras.

- Develop a circuit that is able to measure which cameras are affected by shutter shock
- Test the cameras using various shutter speeds and types of shutter.
- Import the images to Photoshop for analysis

Methodology

During the initial research a previous investigation into shutter shock was found, using an analogue oscilloscope. Based upon this research it was decided to use a mirror galvanometer and laser in this project, to create similar results to that of the analogue oscilloscope. The laser would sweep horizontally across a vertical surface at the same time as the camera shutter.

The cameras that can be accessed are:

- Panasonic G6
- Panasonic GH3
- Panasonic GX7
- Olympus EM1 MKII
- Nikon D800

The test will be carried out between 1/20s and 1/200s since this is when shutter shock is most abundant. These images will then be taken into Photoshop so that the amount of image distortion can be measured.

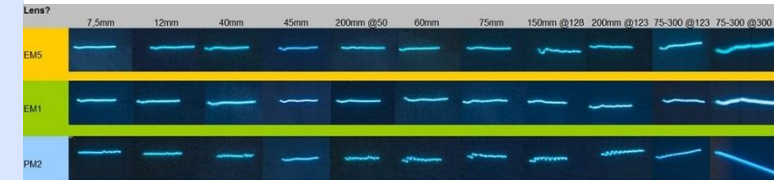


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Expected Results

The resulting images from the testing ideally should return a smooth straight line for the laser sweep. However if there is any pixel perturbation for the laser sweep it will show that shutter shock is present for the current settings and camera equipment being used. Using Photoshop the amount of perturbation will be measured in pixels so that it can easily be compared to other camera models and configurations.



The above image is taken from the analogue oscilloscope investigation that was previously mentioned, using the mirror galvanometer and laser should produce similar results.

Acknowledgements

Camera Ergonomics, "How to Test for Shutter Shock," <http://cameraergonomics.blogspot.co.uk/2013/08/how-to-test-for-shutter-shock.html>.

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