



# Capture Workflow (Photoshop Creative Cloud)

July 2018

## **Filters**

The Target-UV has been calibrated to give the best color rendering using the following filters:

1. Kodak Wratten 2e pale yellow filter
2. Peca 918
3. Internal camera sensor filtration
  - For UV-IR or modified cameras that have had this filtration removed, a BG-38, blue-green glass filter is recommended

## **About this Workflow**

Please see the UV Innovations setup workflow for Photoshop for important instructions on RAW setup that are required before using this workflow. Found at: [www.uvinnovations.com/resources](http://www.uvinnovations.com/resources).

Users must shoot in RAW mode to use this workflow. Screen shots and settings are based on a Nikon D800E tethered to a computer. Images were captured with Nikon Capture II on a Windows system running Windows 10. Adobe Photoshop (version 19.1.5) Camera Raw 10.4 was used for image processing. Separate curves and raw processing settings for other common programs will be provided, as needed. See [www.uvinnovations.com](http://www.uvinnovations.com).

**Please email us at [info@uvinnovations.com](mailto:info@uvinnovations.com) for clarification, questions, or comments on this workflow.** For questions about sales and availability contact Image Science Associates at 1-888-801-6626 or [www.imagescienceassociates.com](http://www.imagescienceassociates.com)

## **Troubleshooting**

Frequently asked questions and suggestions for troubleshooting are provided on our website [www.uvinnovations.com](http://www.uvinnovations.com). In addition to this resource, see *The AIC Guide to Digital Photography and Conservation Documentation*<sup>1</sup>, for more detailed information on the use of UV-visible documentation, workflows, equipment, file management, and other general digital documentation instructions.

## **Summary of Workflow**

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<sup>1</sup> Warda, Jeffrey (ed.), Franziska Frey, Dawn Heller, Dan Kushel, Timothy Vitale, Gawain Weaver. *The AIC Guide to Digital Photography and Conservation Documentation*, 2<sup>nd</sup> Edition. Washington, D.C.: American Institute for Conservation, 2011.

## **Low, Medium, High and Ultra Fluorescence—A Guide to Intensity**

The Target-UV is designed with levels to match the relative intensity of the fluorescence emitted by materials. Due to the emissive nature of UV-Visible fluorescence, users must choose the intensity level for each set of images.



Target UV viewed with UV radiation (peak emission 365nm)

*If you are unsure which Target level to use for image capture, compare the relative fluorescence of your object in UV to each level to help you choose. The correct Target level should fluoresce at a similar brightness to the object being documented. If you are still unsure, try shooting some images and checking your exposures. If you choose an inappropriate intensity level, your images will be over or under exposed. It may take some practice to become familiar with the intensities. See *Target-UV: Troubleshooting* for more tips.*

Below is a very general guide to fluorescence levels. This should be a starting point to get an idea of the fluorescence level, but actual objects can vary greatly due to thickness of application and a variety of other factors.

**Low** UV-visible fluorescent objects are most naturally fluorescent materials

### **Selected examples**

- Most pigments used in watercolor and oil paints
- Thin adhesive films and varnish layers
- Mold and tidelines
- Bodily fluids
- Gemstones

**Medium** UV-visible fluorescent objects are most naturally fluorescent materials. This level is similar to “Low”, but might be used to illustrate a lower intensity.

### **Selected examples**

- Paper sizing
- Currency
- Mold and tidelines
- Bodily fluids

**High** UV-visible fluorescent objects are thicker applications of naturally fluorescent materials, as well as early or degraded fluorescent pigments/dyes

### **Selected examples**

- Thick adhesive and pigment layers
- Early optically brightened (OBA) photographic papers (circa 1957-1960s)
- Early 20<sup>th</sup> century stamps
- Some feathers
- Dyes added to credit cards, American driver’s licenses, passports
- Fluorescent minerals
- Uranium glass
- Ivory, teeth and bone

**Ultra** UV-visible fluorescent objects are materials that are manufactured to be fluorescent

### **Selected examples**

- Optically brightened photographic and commercial paper post circa 1970
- Fluorescent pigments and dyes

## Step 1: Setup

Ensure that:

- Required filters are in place (typically Wratten 2e and PECA 918)
- Your documentation area is set up for UV/visible documentation

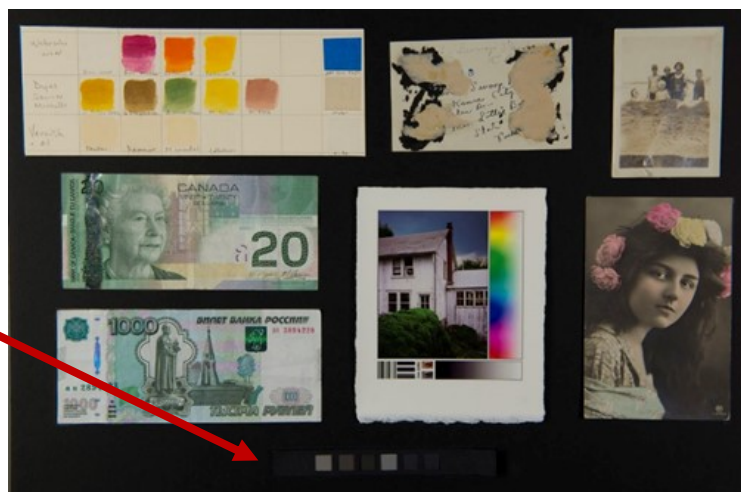
*See “Setup Workflow Photoshop” for more information on recommended setup procedures*

## Step 2: Image Composition

Arrange your object[s] in your documentation space so they are centered and will be evenly illuminated by the UV source.

- a. Choose which intensity to use for your object (low/medium or high/ultra) based on their relative intensities. You may want to turn on the UV source (and turn off the overhead lights) to decide. See page 2 for a rough guide for choosing intensities.

- b. Place Target-UV. The reference card should be placed in the center of the field of view below the artwork being documented. This ensures that it is evenly illuminated by lights from both sides and provides an accurate representation of the artwork. (see image).



- c. Focus your image. If desired, use camera live view with overhead light on, but limit the use of live view, as it may unnecessarily heat up your camera's sensor.
- d. Fill the frame as much as possible.
- e. Use camera auto-focus, if desired, but switch the focus to “Manual” to lock the focus before shutting out the lights for image capture.
- f. Turn on UV source and turn off overhead or working lights. Make any final adjustments to the angle of the UV source to reduce shadows and ensure even illumination.
- g. Cover the object with black paper or foam-core, or cover the UV source. Let the UV lamps warm up for at least 5 minutes.
- h. Measure the distance and angle of the lights and record for a repeatable workflow. Take a snapshot of your UV documentation set up in normal light if desired to help re-produce the set-up in the future.

### *Step 3: Capture Settings*

While you are waiting for the lights to warm up, adjust your camera capture settings to download, name and store the files as required. Ensure that the white balance is set for the UV-Grey card.

Example below is for Nikon Capture Control:

- a. Recommended Camera capture settings
  - Download options [adjust and specify where you wish to save files]
  - File naming [specify file naming as needed]
  - Exposure
    - **Use Manual exposure**, as desired. Target-UV exposures typically work best with Manual exposure.
    - **Choose f-stop**: a setting in the middle of your lenses range is recommended for maximum sharpness ( $f/11$  is a good starting point)
    - Adjust exposure compensation, f-stop or shutter speed as desired during your session for proper exposure.
    - **ISO = 200**
    - **White Balance = as set from UV-Grey card** (see “Setup Workflow Photoshop” document for instructions on setting and saving white balance)
  - “Storage” Image Quality [RAW] [lossless compressed] [14-bit]
  - “Image processing”: Colorspace [ProPhoto, if possible, if not use Adobe RGB]

Turn off overhead lights and uncover UV light source or artwork. Note: allow for warm up times.

### *Step 4: Image Capture*

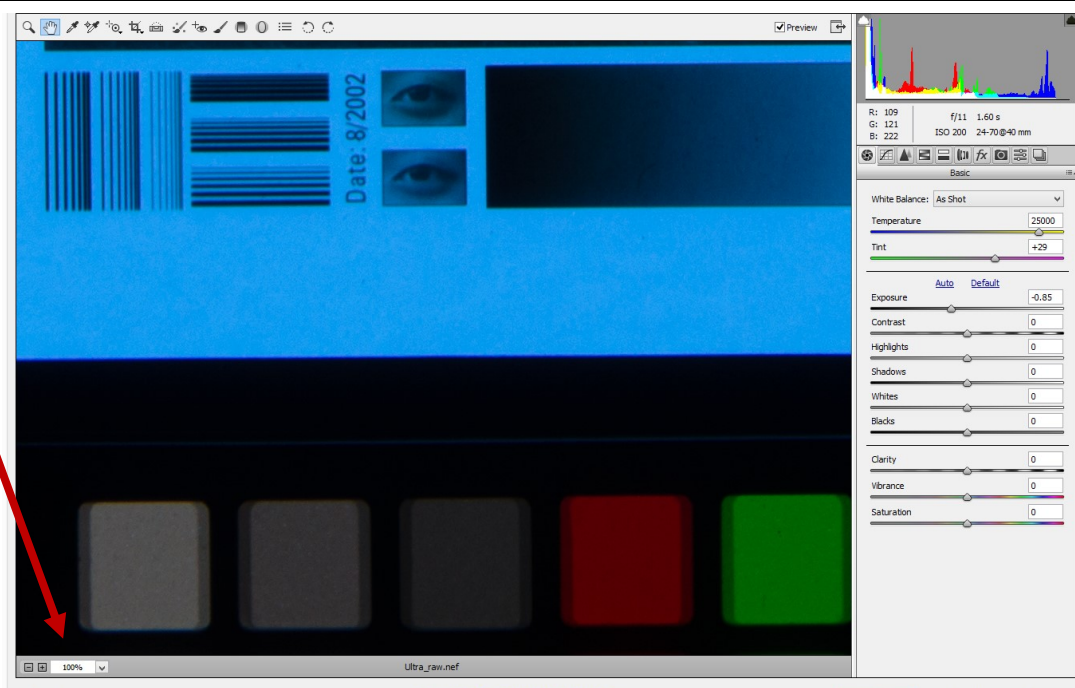
Take picture

- a. Make sure room lights are off and no visible light can leak into your documentation area.
- b. Set exposure manually or using aperture priority. Exposures will vary greatly, so you may have to guess. Typical exposure times at Messier studio range from 5 to 20 seconds at  $f/11$ .
- c. Position the mouse over “shoot” and then cover or shut off the monitor (black Fome-cor can be very handy here). Make sure to keep mouse in place so you can click while monitor is off.
- d. Click the mouse to take the picture.
- e. Remove the monitor cover/turn on monitor. Turn on room lights, or working lights, as desired. For best viewing conditions for the images on your monitor, keep overhead lights off and limit the use of a working light. Dim monitor, if needed.
- f. Cover the object if necessary, or cover UV lamps.


## Step 5: Load RAW settings and Evaluate Images

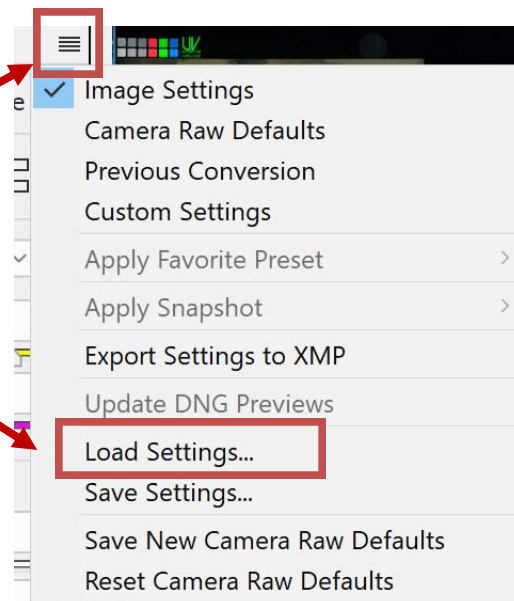
a. Open the Image in PhotoShop Camera raw.

b. Check framing, focus (zooming into 100% is the best way to evaluate focus) .



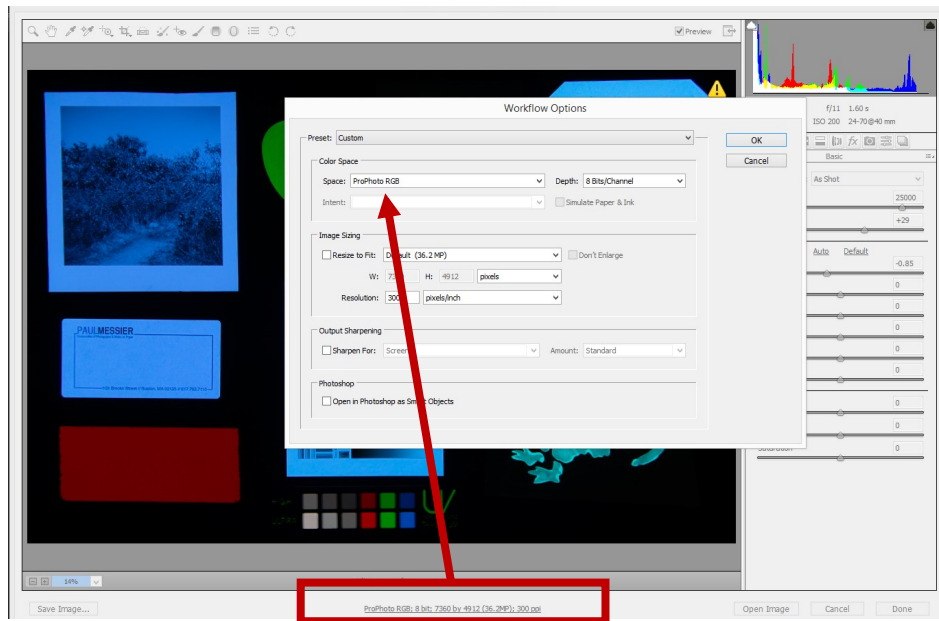
c. While still in Photoshop Raw - Load pre-set UV innovations raw settings as follows:

- Click on the small Camera raw settings menu  in the upper right corner just above the white balance adjuster.
- Select **Load Settings...** from menu and select “uv\_innovations\_recommended\_raw\_adjustment.xmp” file (saved previously\*) from the popup menu.




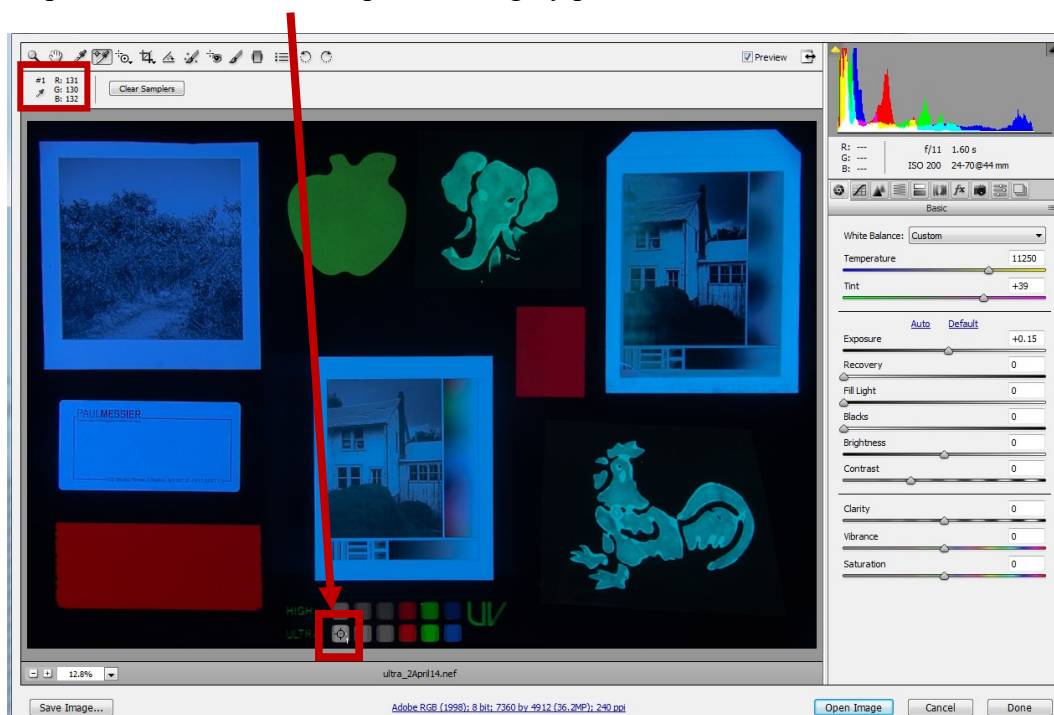
\* see “Setup Workflow Photoshop” document for instructions on setting and saving this pre-set.

- d. Ensure that the file is set to ProPhoto color space by clicking the hyperlink on the bottom of the Photoshop RAW window. Select “ProPhoto RGB” in the dropdown menu “Space”. Note that this color space works best with a 16 bit/channel depth.
- Alternately, you can use Adobe RGB (1998), or another color space, but your target exposure values on page 7 will change.



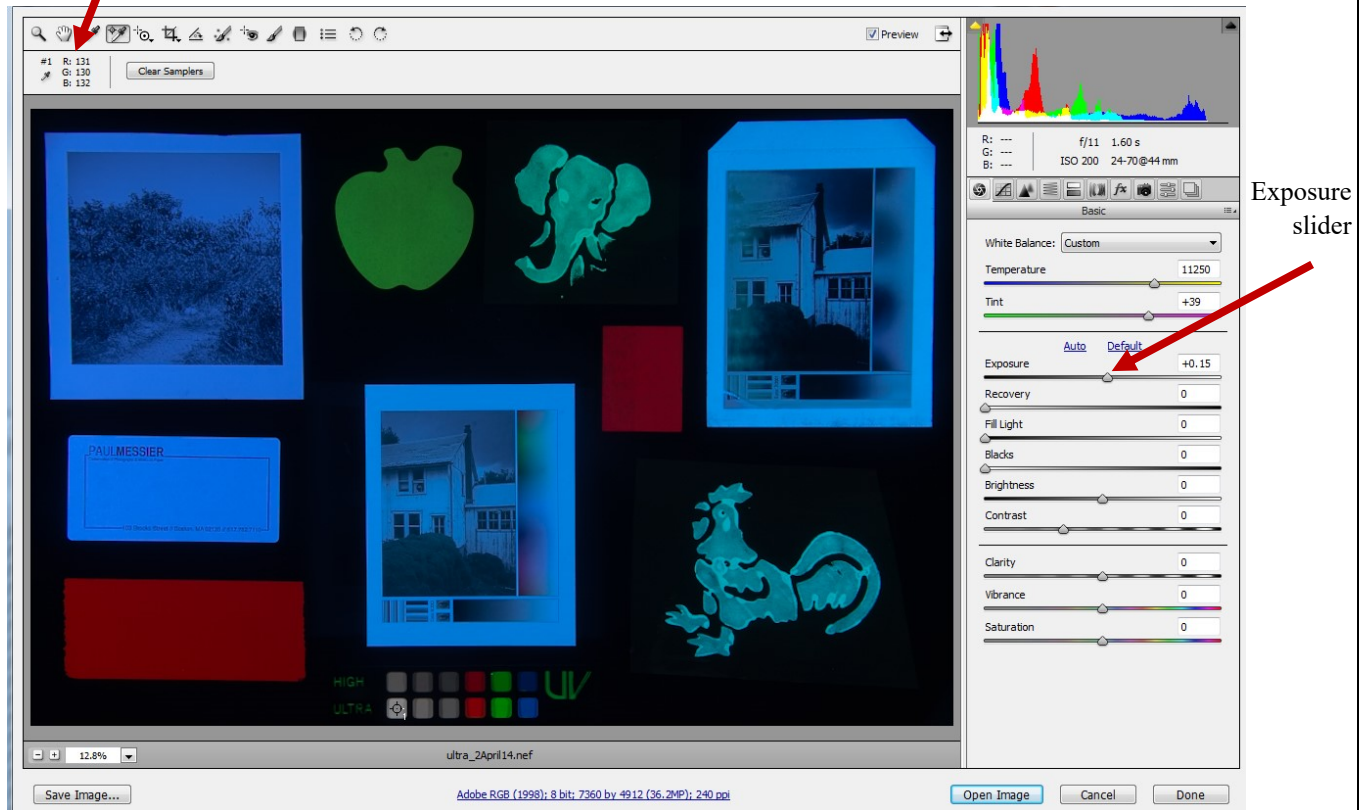
e. Check exposure


- Select the “color sampler tool”  in the top left menu of PhotoShop raw.
- Click on the grey patch all the way to the left of the Target-UV (the brightest grey patch on the level you have chosen). This will read the RGB values and add them to the top pane of the RAW window. If readings are erratic due to uneven pigment distribution, it may help to place more than one sampler on the grey patch.





- Adjust exposure slider until the RGB values equal **128 (50% RGB) +/- 3 units**.
    - Note that the value will be different in a color space other than ProPhoto. Adobe RGB (1998) = 148
- \*\*\*Re-take if exposure requires more than 2/3 stop (0.67) adjustment in RAW.



- It is best to use the stored white balance captured in the “setup workflow” using the UV-Gray card. However, you can adjust the white balance in the RAW image, if needed.
  - Adjust white balance of the RAW image, using the white balance tool  in the top left corner of the Photoshop raw window and then clicking on one of the gray patches in the Target-UV.

### White Balance Tool

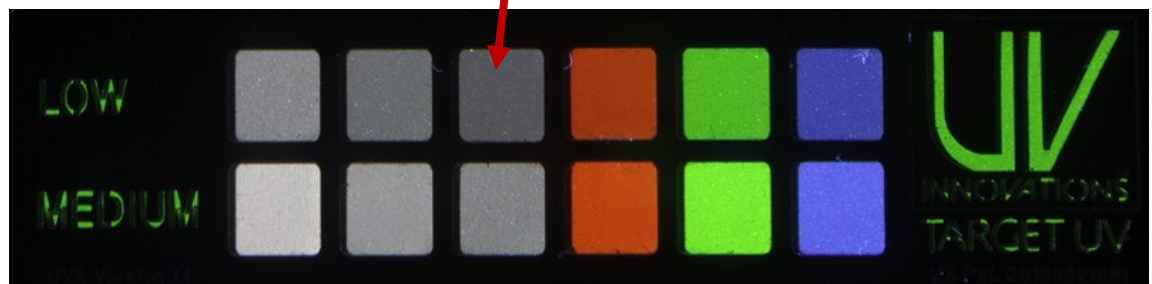
*Use care with this tool as small variations and large particle size in the Target-UV may make it difficult to white balance off the grey patches. For example, zoom in to ensure that you are not measuring or white balancing on a spot with a large particle of green pigment.*



- Alternate exposure options

For items with very low fluorescence, alternate exposure values may give better detail rendering. Use the following settings for a “low-low” level.

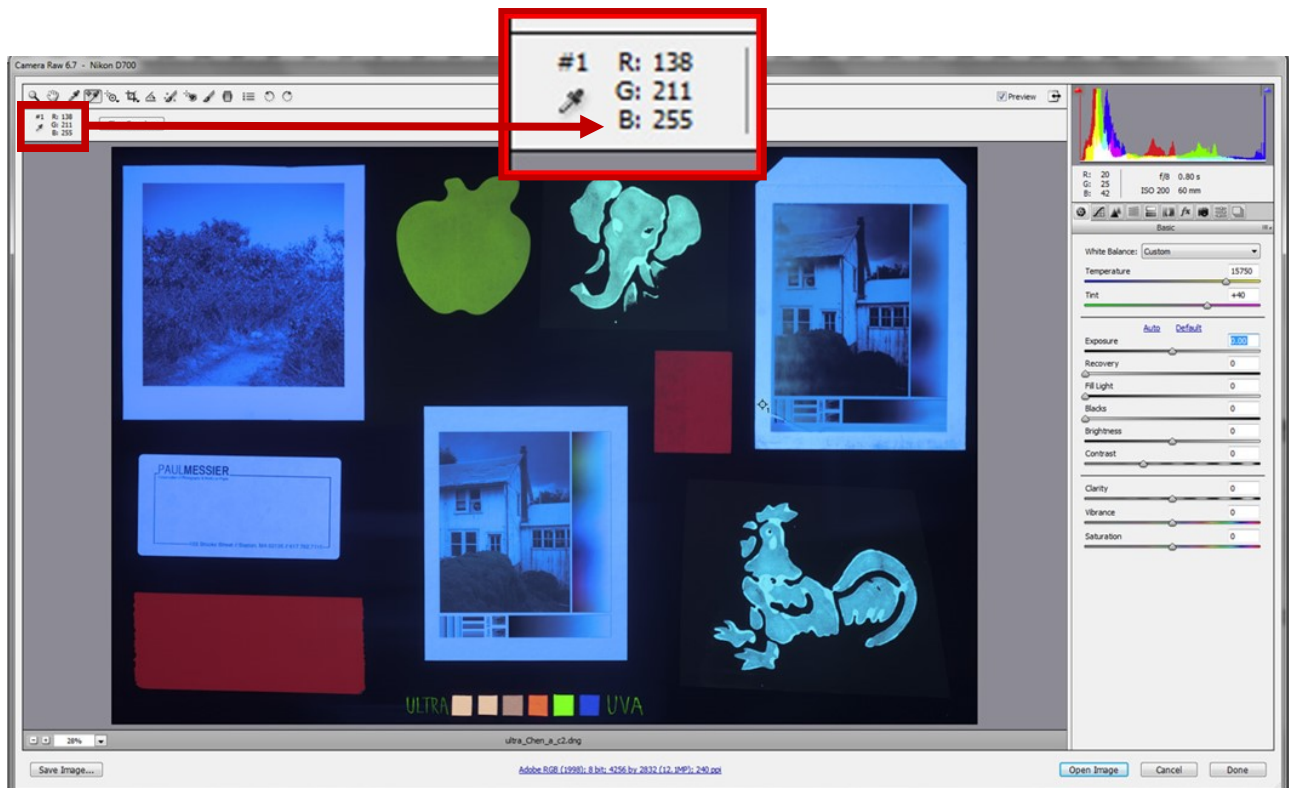
- Use the darkest gray patch on the “low” level of the Target.



- Adjust exposure until RGB values on this patch equal **128 (50% RGB) +/- 3**.
- If necessary, cover or crop out the “medium” level on the Target to prevent highlight clipping and/or bleeding.

- Note adjustments to standard protocol in metadata and image captions.

- Use the color sampler tool to ensure that no portions of the image hit a max RGB value (255). Look for the brightest areas of the image, particularly any optically brightened materials. Re-take image with a different intensity Target-UV if any portion of the image hits a max value of 255.





## Step 6: File Management & Metadata

- a. Save the image as desired using the “Save Image” button in the bottom left corner of the Photoshop RAW window. Messier file naming protocol is [object number] [a-before treatment, b-after treatment] UVA [v if verso]. Ex. 13.039UVA, or 13.039UVA<sub>v</sub> for verso. Save files as desired. DNG, and TIFF formats are recommended for archival storage of files.

- b. Click “Done” in the bottom right corner to keep your RAW settings.

- c. Record all necessary data on metadata in the image file using Adobe Bridge or other Metadata system. See Adobe Photoshop help, or *The AIC Guide to Digital Photography and Conservation Documentation*<sup>1</sup> for information on Metadata. Recommended metadata info includes:

- Camera and exposure data (usually automatically added to metadata)

Camera	Color temperature + tint
Lens	Focal length
F-stop	Date Created
Shutter speed	ISO
Exposure compensation	Size
File name	Pixel dimensions
File type	Bit depth
	Color mode

- Recommended additional metadata to add to IPTC core metadata [description field], or other metadata system.

Your name	Distance from subject to light source
Filters used	RGB reading of lightest grey patch from Target-UV
Target-UV level used	RAW adjustments
Lighting used (model number and peak emission)	(Other notes, keywords, as needed)
Distance from lens to subject (height of copy stand)	

- d. Repeat workflow as needed with additional images.

<sup>1</sup> Warda, Jeffrey (ed.), Franziska Frey, Dawn Heller, Dan Kushel, Timothy Vitale, Gawain Weaver. *The AIC Guide to Digital Photography and Conservation Documentation*, 2<sup>nd</sup> Edition. Washington, D.C.: American Institute for Conservation, 2011.