

Mobile Image Capture for Collections: Results for *iPhone 18 Pro Max*

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The following is an update to our presentation at this year's Archiving Conference in Boston [1]. We present some imaging performance results for an *Apple iPhone 18 Pro Max* unit.

Background

Previously, we examined the potential of contemporary mobile devices, particularly smartphone cameras, to support large-scale digitization of cultural heritage. We also described how automated metadata generation and digital collection systems can complement mobile capture. When testing the imaging performance of several mobile-device cameras, we noted limitations, such as nonuniform illumination and inconsistent sharpness across captured images.

Caution: The following results are based on a single unit under test, which we will refer to as *iPhone 18*, in one evaluation. A range of illumination and camera settings were not used, so these results may not be representative of all situations and applications. *So, let's not run too far with these results.* That said, we used the same testing methods and analysis software as for our previous study. Tom Rieger captured the images, and Peter Burns and Don Williams completed the analysis and plotted the results.

Testing and Results

Recently, T. Rieger completed a limited test of an iPhone 18 using a copy stand and FADGI ISO 19264 test target, as before. Figure 1 from Ref. [1] shows a similar testing setup. The test image was captured as a raw Adobe RGB (1998) encoded, 16-bits per channel. We will limit our reporting to two performance measures.

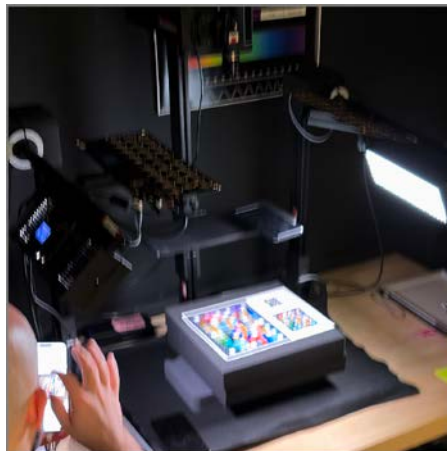


Figure 1: Copy stand used for imaging performance evaluation [1]

Color Encoding Accuracy

We used ΔE_{00} as the color-goodness measure, consistent with the FADGI Guidelines. [2] For this test image, applying a custom ICC color profile significantly improved color accuracy. Figure 2 shows the results in the test images, 18 megapixels each. We can see a clear color cast in the input test, often due to the capture illumination rather than the camera. This was significantly reduced by the color profile, as we would expect.

The corresponding color differences for the patches are summarized in Fig. 3. Each difference is computed between the input test target patch CIELAB values and those for the image values computed from the Adobe RGB encoding. The analysis and histogram reporting were done using Golden Thread software [3].

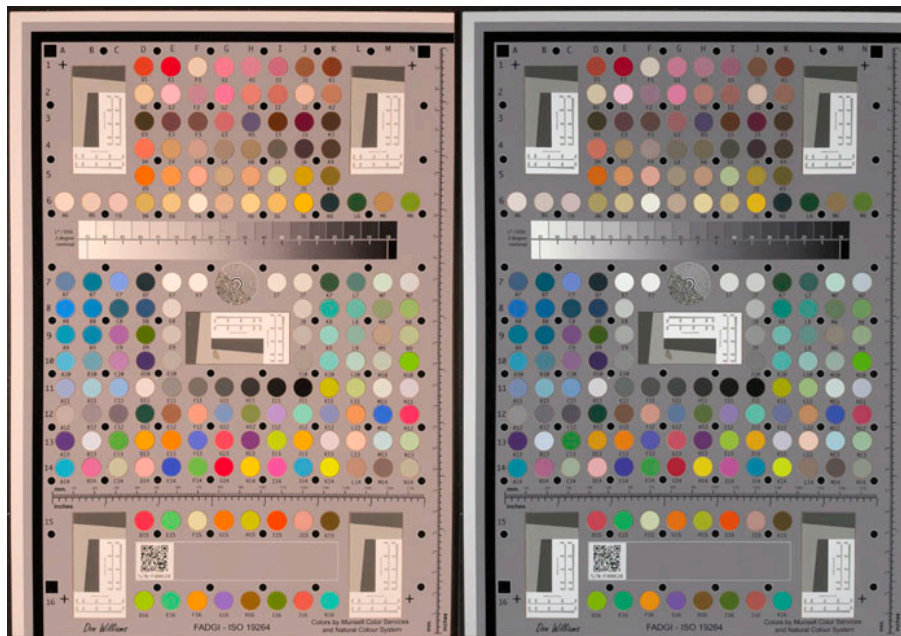


Figure 2: Test images from copy stand and iPhone 18 evaluation: input (L) and color-corrected (R)

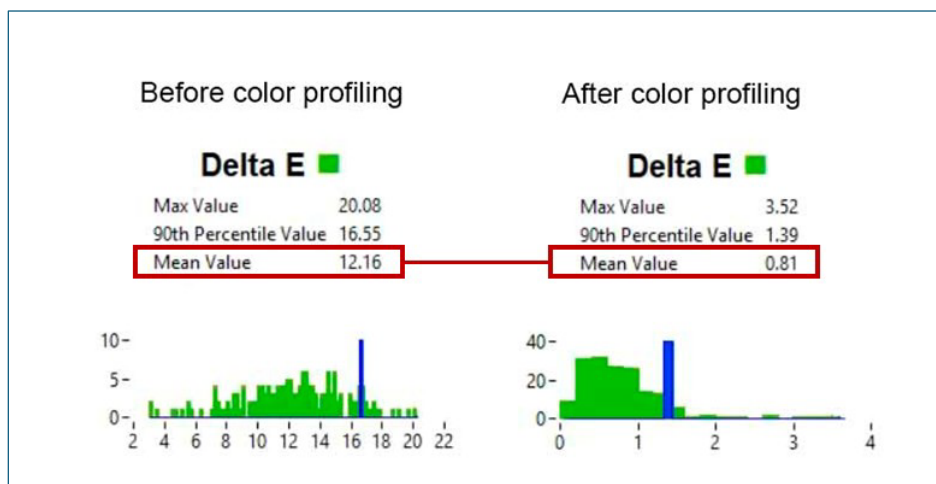
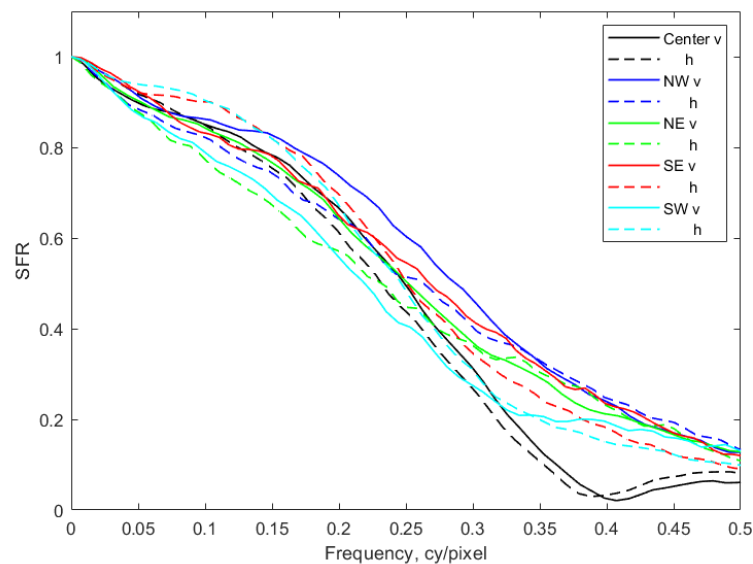
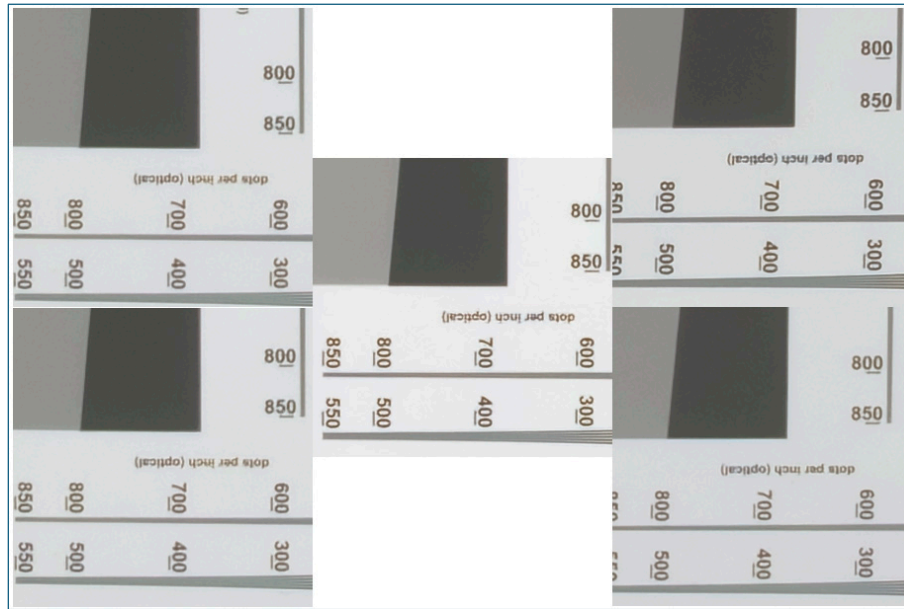


Figure 3: Color encoding error results before and after custom ICC color profile correction

Spatial Frequency Response

The method used to measure the capture of object or scene details by a camera is the Spatial Frequency Response (SFR). This method analyzes edge features per ISO 12233 and is used under FADGI. Figure 4 shows cropped image regions used for this evaluation. Note that these regions only show example edges in the vertical orientation for illustration. The analysis was performed for both vertical and horizontal edges

in these areas. These results were computed using the SFRMAT5 Matlab function that is part of ISO 12233 [4].



We can further summarize this intra-image behavior by comparing the center and edge performance. This is shown in Fig. 6. The edge results are the mean SFR for the four regions near the corners of the test image.

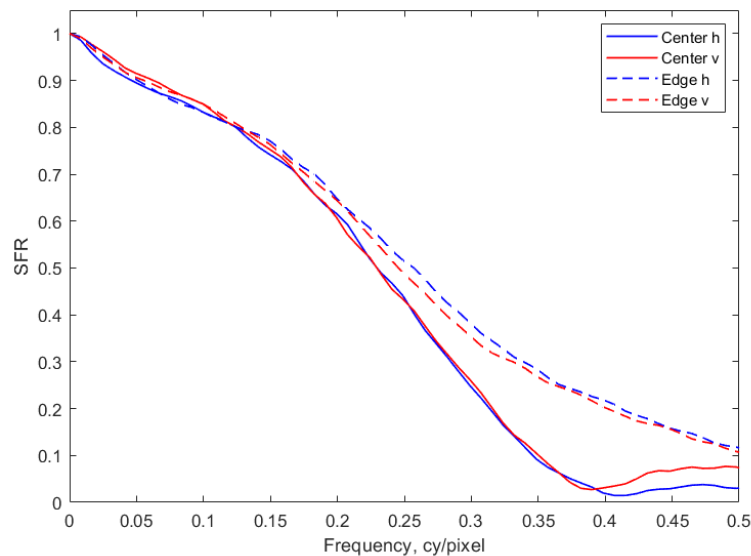


Figure 6: Summary of results from Fig. 5 indicating center-edge performance

The generally similar apparent image detail/sharpness observed across the image Fig. 4 is consistent with the consistent edge-SFR results of Figs. 5 and 6.

Summary

The results of our brief evaluation showed more consistent imaging performance across the image field than we have observed for most other devices. We intend that this and related performance evaluation contribute to efforts in field acquisition for digital preservation and collections.

References

1. D. Serrentino, P. Burns, L. Cooper, M. Sao Pedro, J. Bosanko, J. Decker, D. Williams, and T. Rieger, Mobile Imaging and Metadata Capture for Cultural Heritage Preservation, *Proc. Archiving Conference*, 2026, IS&T, pp. 18 – 23. <https://library.imaging.org/archiving/articles/23/1/5>
2. FADGI Still Image Working Group, ed. T Rieger, US Library of Congress, <http://www.digitizationguidelines.gov/>
3. Golden Thread Software, Image Science Associates, <https://www.imagescienceassociates.com/>
4. P. D. Burns, K. Masaoka, K. Parulski, D. Wueller, Updated Camera Spatial Frequency Response for ISO 12233, *Proc. IS&T Int'l. Symp. on Electronic Imaging: Image Quality and System Performance*, 2022, pp 357-1 - 357-6, <https://doi.org/10.2352/EI.2022.34.9.IQSP-357>