

Using a Mobile Device for Scanning

You may have heard about using the digital camera in your mobile device for scanning. Here's a technical comparison to an authentic high-quality flatbed like the Flip-Pal mobile scanner.



Mobile device

- An 8MP camera such as the iPhone 6 on a US letter page is 220 dpi. Most authorities recommend a minimum of 300 dpi, with 600 dpi for making enlargements or scanning small areas. Lower resolutions may appear okay on a mobile device screen. However, you will see blurriness when printed or enlarged.
- It is very difficult to get uniform lighting on the object and avoid shadows using the ambient lighting in the room. Using the flash produces a reflection.
- The camera must be held perfectly 90 degrees above the object to avoid shape distortions. Even then, the corners will be distorted by the tiny circular lens.
- Most scanning apps store the image as PDF files. These are very difficult to import into software such as genealogy, crafting, image editing, or word processing and may or may not be supported in cloud storage sites.
- The sensor in a digital camera is an arial array (the sensing elements are arranged in an array). Arial arrays do not physically have a sensor for each pixel. Rather, they simulate pixels by combining adjacent sensors (interpolation). That results in loss of sharpness, such as thin lines that blend together and edges that are not sharp.
- In order to save cost and fit in small space, the sensors in digital cameras are oftentimes integrated with other functions on a high density CMOS chip, resulting in noise caused by heat and the other digital functions fabricated on that same substrate.
- The sensors are extremely small which restricts the amount of light that can reach the element, again resulting in noise.
- The mobile device's lens and optical path is constricted to fit in an extremely small space. The small aperture, fixed focus, and folded light path limits the sensitivity, which results in random noise that shows as graininess detail in the shadows.
- Most digital cameras enhance the colors with more saturation. This looks appealing on a mobile device, but when printed will have color shifts such as facial tones that are orangish.

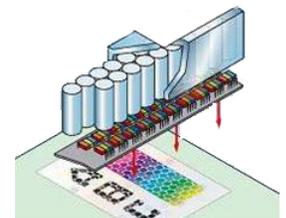


Flip-Pal mobile scanner

- Uses a linear array, with a sensing element for each pixel. The sensor is mounted in a carriage that is moved precisely below the glass. Flip-Pal's Contact Image Sensor (CIS) has 600 physical elements per inch. It does not use interpolation to achieve its high resolution. Flip-Pal's 600 dpi translates to 28Mpixel, 3.5 times the iPhone's.
- The CIS uses wide-spectrum LEDs that illuminate the surface as the carriage moves. This provides perfectly uniform illumination and a full color gamut - the range of colors that are captured.
- Each sensing element has its own microscopic fiber optic lens with nearly 1/8" of focal depth. That allows it to scan through the plastic covers of photo albums, and photo frames with thin glass, without reflections.
- The CIS uses Charge Coupled Device (CCD) sensors on a separate custom chip. CCD produces better dynamic range and less noise than CMOS.
- Stores the image as a low-compression (highest quality) jpg file. That is the most prevalent image file format, compatible with software on modern operating systems Windows, OS-X, and Linux, and cloud storage sites.
- Produces images that adhere to the sRGB standard, resulting in capture of colors that are true to the original. When viewed on a monitor, or printed with a high-quality printer which also use the sRGB standard (most do), the colors will be accurate.
- There is no shape distortion with the CIS. It is perfectly rectangular.



CIS used in Flip-Pal. 600 dpi, 4 inches



CIS has a precision tubular lens for each sensing element

Examples



A photo scanned by Flip-Pal



A picture taken of a photo by an iPhone

Reflection from flash

Fuzziness from shake and out of focus

Shape distortion

STATE Pennsylvania COUNTY Allegheny TOWNSHIP OR OTHER DIVISION OF COUNTY 1st Precinct

DEPARTMENT OF COMMERCE—BUREAU OF THE CENSUS
FOURTEENTH CENSUS OF THE UNITED STATES: 1920—POPULATION

ENUMERATED BY ME ON THE 27th DAY OF January, 1920.

SUPERVISOR'S DISTRICT No. 24 SHEET No. 10
ENUMERATION DISTRICT No. 261 OF CITY 10 B 79

| PLACE OF BIRTH | NAME | RELATION | SEX | FORM | CITIZENSHIP | EDUCATION | NATIVITY AND MOTHER TONGUE | | OCCUPATION |
|----------------|-----------------------|-----------------|----------|------|-------------|-----------|----------------------------|---------------|-------------|
| | | | | | | | Place of Birth | Mother Tongue | |
| | <u>Urbana R.</u> | <u>wife</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Mary Mae</u> | <u>daughter</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Mary Catharine</u> | <u>daughter</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>George</u> | <u>head</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Colie</u> | <u>wife</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>James C.</u> | <u>head</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Rouise</u> | <u>wife</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>William C.</u> | <u>son</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Horner O.</u> | <u>son</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Phoebe H.</u> | <u>wife</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>James Ernest</u> | <u>son</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Munnie</u> | <u>son</u> | <u>M</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Makida</u> | <u>wife</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Lena</u> | <u>daughter</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |
| | <u>Mae</u> | <u>daughter</u> | <u>W</u> | | | | <u>Pennsylvania</u> | <u>German</u> | <u>None</u> |

1940 census. 14x20" scanned in 12 sections and reassembled with EasyStitch software

Thin lines are sharp and straight

Handwriting is legible

Document is perfectly rectangular

No evidence of stitching

Sharing

An advantage of your mobile device is the ease by which you can share with others. That can be done with the Flip-Pal wireless scanner, or with the Wireless Upgrade. The scans are wirelessly transferred to your mobile device's camera roll and all those sharing capabilities are instantly available for your scans.

Wrapup

The Flip-Pal team invented our mobile scanner to provide image quality on par with the finest scanners. We did extensive research across the globe and selected the CIS used in Flip-Pal because of its state-of-the-art image quality and fabrication by an industry leader in Japan. It is not the least expensive but is money well spent. With over 70 years of combined experience in digital imaging, the Flip-Pal design team engineered our scanner to not compromise on image quality.

You'll see the difference between a Flip-Pal and a digital camera when you look at the skin tones, the detail in the shadows, and the sharpness of edges and lines. Your mobile device or computer screen will not show those deficiencies. It may be good enough for some. But, when preserving your memories really matters, you will want a digital version that is faithful to the original in every way, just as the Flip-Pal mobile scanner does.