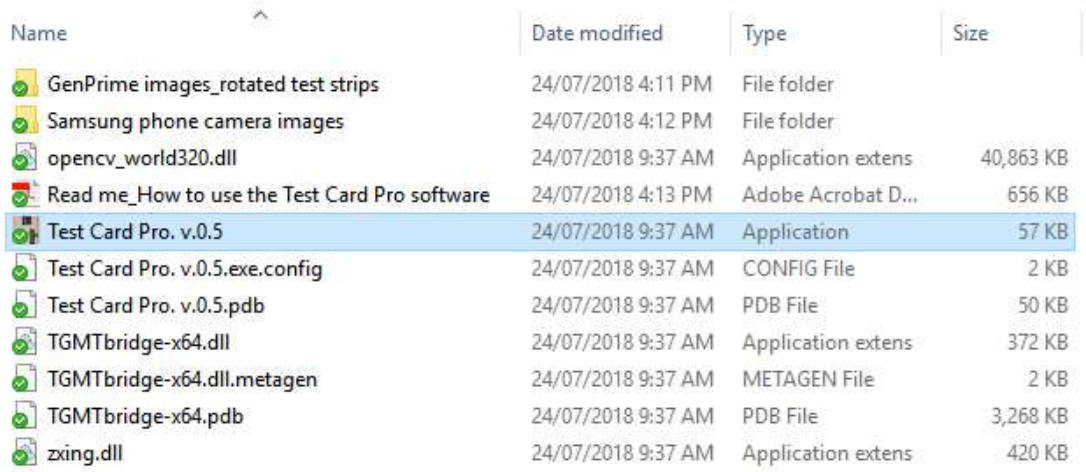
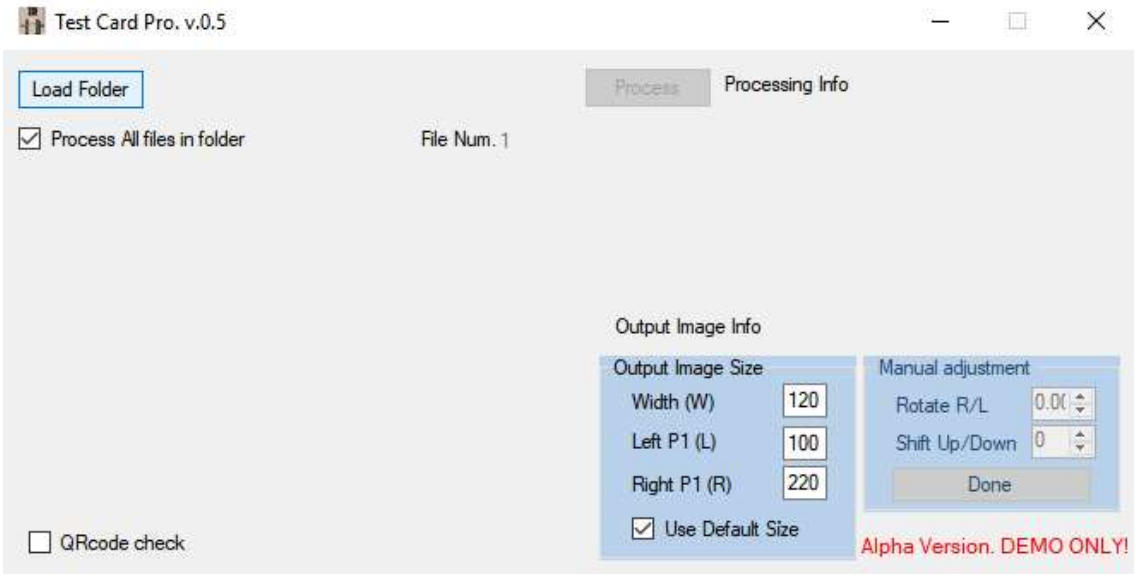
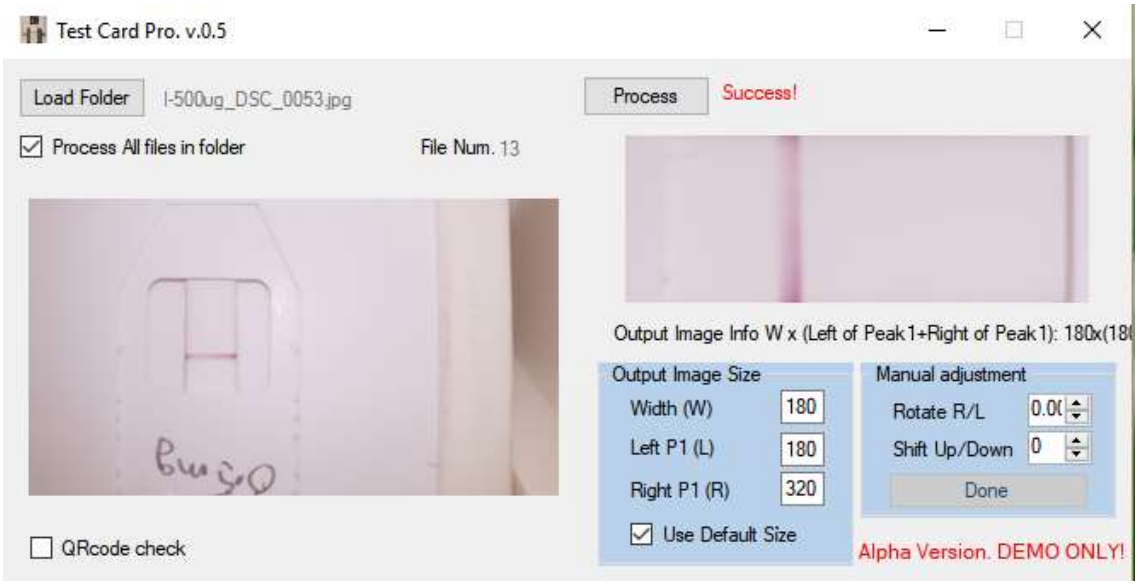
How to use the Test Card Pro software

1. Open the software (Test Card Pro. v.0.5.exe file).

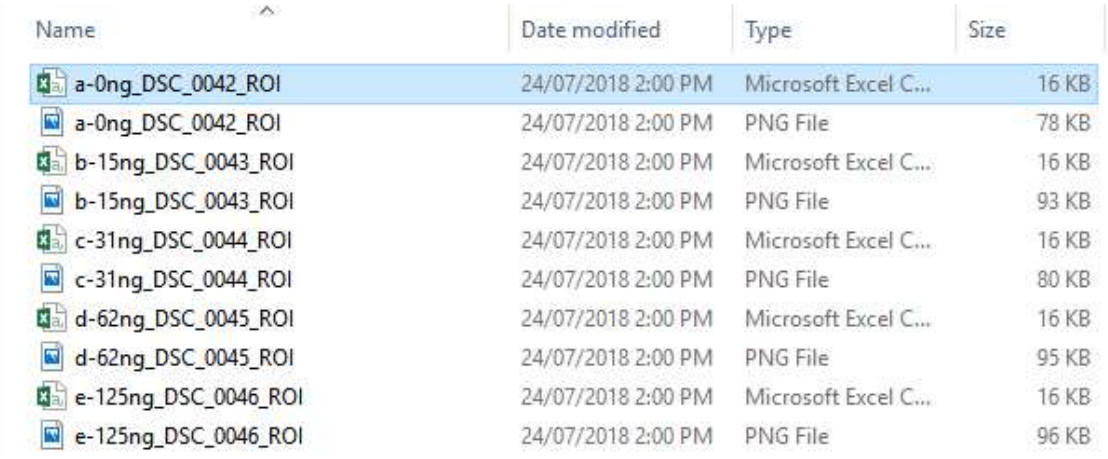




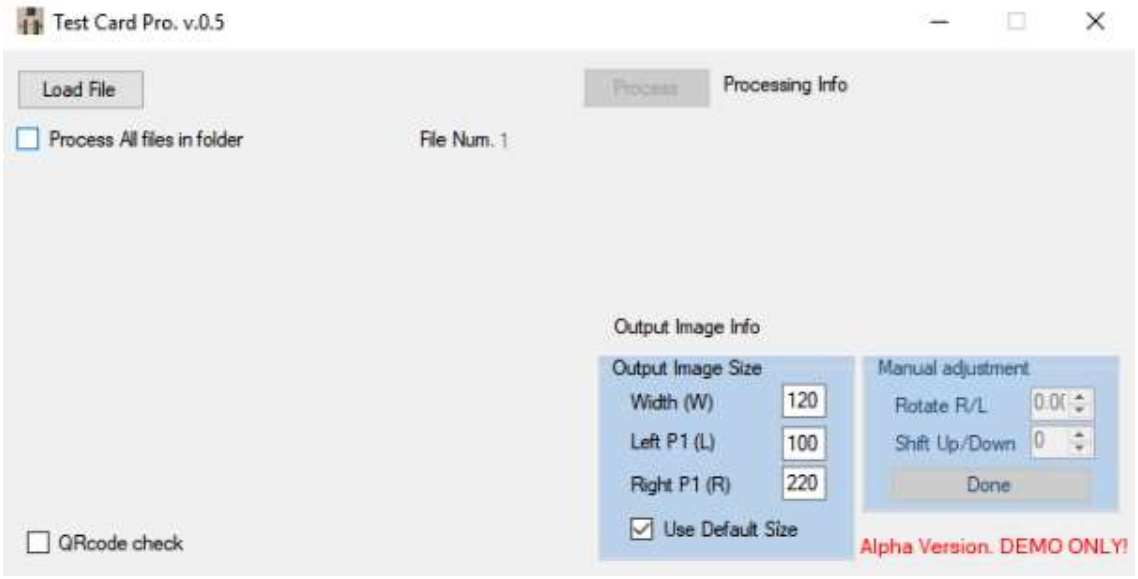
2. To do batch processing of images of test cards:
    a. Click “Load Folder” to load the folder of images of test cards you want to process.
    b. Wait until the processing finishes.



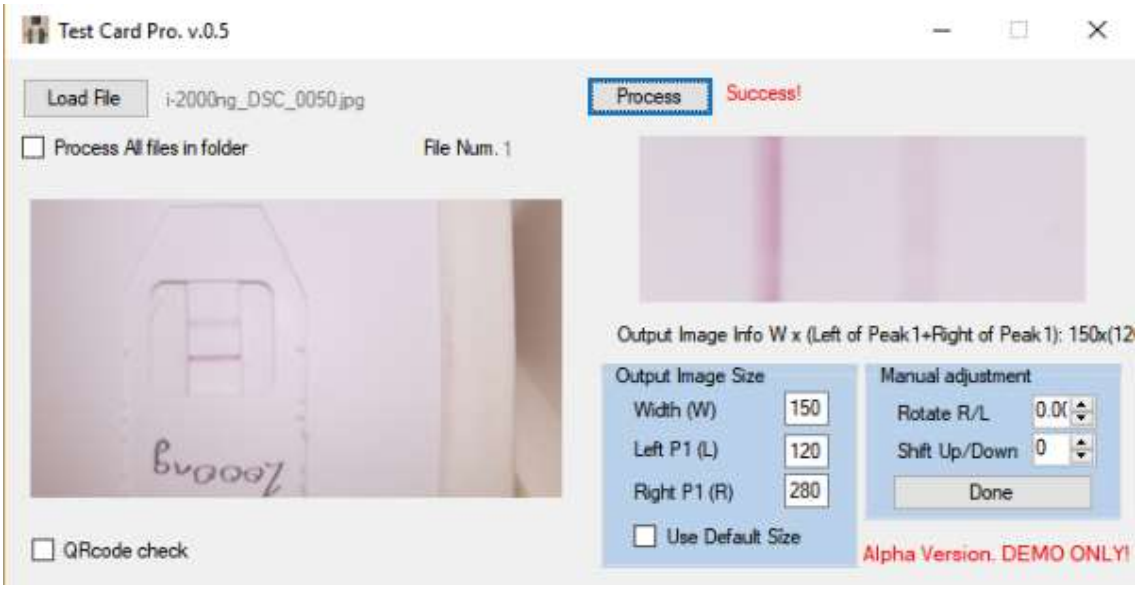
3. Open Window Explorer -> go to the “Processed” subfolder that was just created in the folder containing the images the software just processed. The “Processed” folder contains output files:
    a. png files of the region of interest (ROI) of test cards.
    b. csv files of raw data (average intensities/brightness) of the ROI in Grey, Blue, Red and Green channels.
    c. Error.txt file that lists all unrecognised images.



4. To process each image individually:
    a. Untick the “Process All files in folder” box.
    b. Click “Load file” to load an image.
    c. Click “Process” button.
    d. Follow step 3 to view the output files.

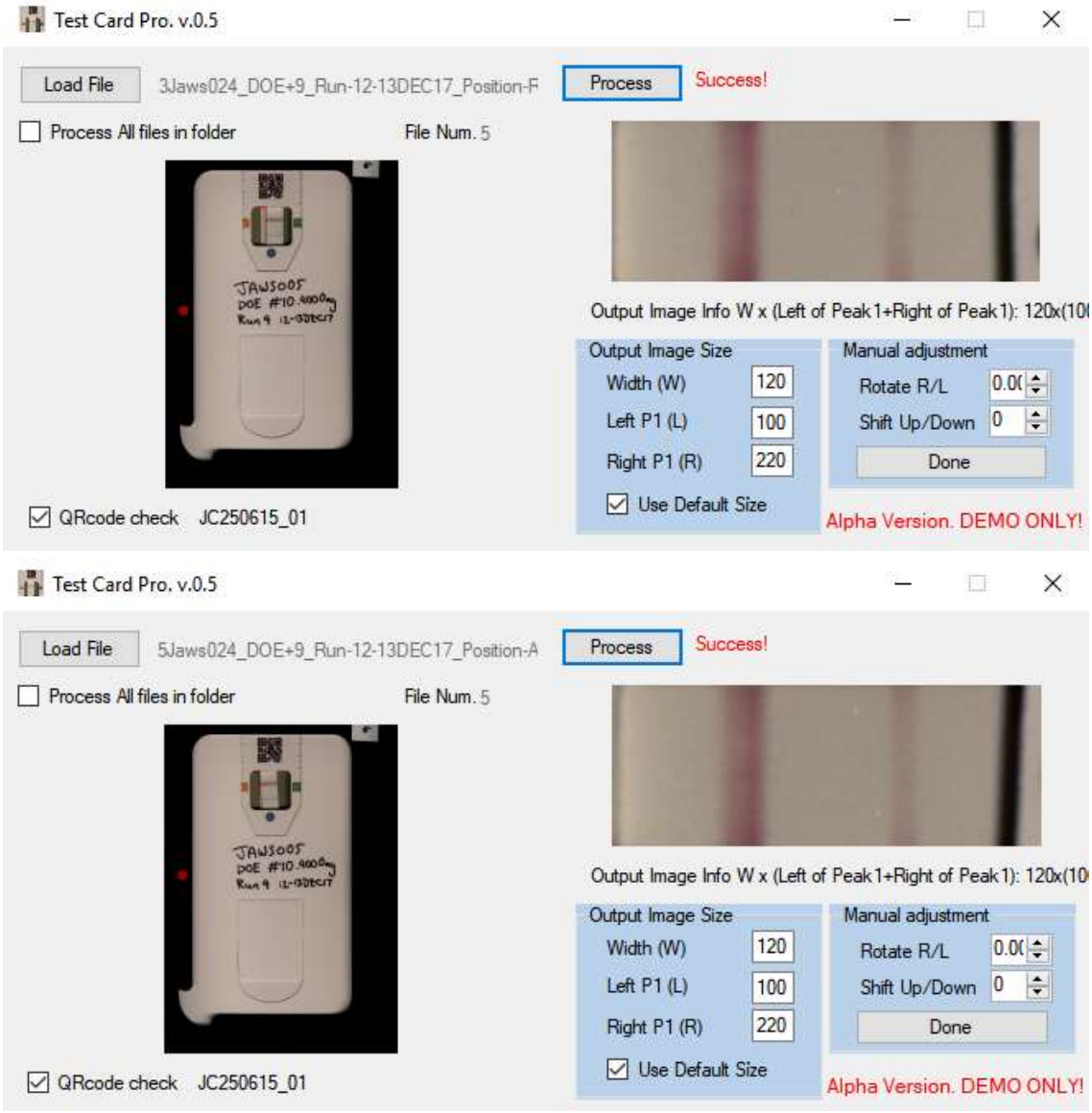


5. The default size of the ROI is 180 pixels x 500 pixels (180 pixels to the left of the control line, and 320 pixels to the right of the control line). You can change the ROI's size (in the Output Image Size) if you wish, then repeat steps 2-3, or step 4. Tick the "Use Default Size" box to go back to the original values.



6. (Optional) The ROI of an individual image can be manually adjusted by changing values in the "Manual adjustment" box after doing steps 4a, 4b and 4c. Click "Done" when you finish doing manual adjustment. The software will over-write all the output files previously created in Step 4 for the image.
7. QR code reader: tick the QR-code check, then follow steps 4a and 4b, and view the result. At this stage, the demo software uses a FREE QR-code library so only high-quality QR codes can be read.

8. The software can automatically detect the test strips regardless of their movement/rotation within the manufacturing tolerances (± 2mm). As we don't have any images with intentionally rotated test strips taken by the Samsung phone camera, please use the GenPrime reader-scanned images for testing this automatic detection of test strip feature. Follow steps 2 and 3.



Note: at this stage, separate scripts written in MATLAB are used to calculate the area under curve (AUC), peak height, peak width of control line and test line, ratios of AUC or peak height or peak width of control line and test line (using the raw data in the Greyscale or RGB channels as input files).