

# Kofax mobiFlow SDK Developer's Guide

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**TUNGSTEN**  
**AUTOMATION**  
FORMERLY KOFAX

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# Table of Contents

<b>Preface</b> .....	<b>5</b>
Product documentation.....	5
Full documentation set.....	5
Offline documentation.....	6
Getting help with Kofax products.....	6
Training.....	7
<b>Chapter 1: Mobile Capture parameters</b> .....	<b>8</b>
mobiFlow SDK version information.....	8
Basic parameters.....	8
Document types.....	8
Capture parameters.....	9
Aspect ratio.....	9
Capture type.....	10
Video feed processing.....	11
Max video frame to capture.....	12
Validation parameters.....	13
Blur detection.....	13
Image quality assurance (IQA).....	13
Minimum requirements.....	16
MICR length.....	17
User interface parameters.....	17
Countdown.....	17
Default processing view.....	18
Info screen.....	19
Show guidelines indicators.....	21
Surrounding color for document frame.....	22
Leveler.....	22
Dynamic strings.....	26
Custom view.....	26
OCR parameters.....	27
Barcode.....	27
OCR type.....	28
Output parameters.....	28
Original image.....	28

- Color image..... 29
- Grayscale image..... 29
- Black and white image..... 29
- Grayscale size..... 29
- Binarize the back same as the front..... 30
- Binarization type..... 30
- Front image size..... 30
- Chapter 2: Licensing..... 31**
- Chapter 3: Collecting results..... 32**
  - Barcode results..... 32
  - Check results..... 32
- Chapter 4: Events and errors..... 34**
  - Error handling..... 34
  - Events handling..... 36
- Chapter 5: Look and feel..... 38**
- Chapter 6: Guidelines for successful capture..... 39**
  - Contrast..... 39
  - Background homogeneity..... 39
  - Lighting..... 39
  - Shooting and rotation angles..... 39
  - Taking the picture..... 40
  - Checks only: Digital row (MICR)..... 40

# Preface

This guide describes the parameters that are available in Kofax mobiFlow SDK. This guide extends information in the SDK guides for iOS and Android. It explains each parameter from the user or designer point of view. Use this guide in the design stage, to understand capabilities of mobiFlow, and to understand the behavior changes when setting up mobiFlow SDK parameters through the code.

## Product documentation

To access the full Kofax mobiFlow documentation set online, see the [Kofax mobiFlow Product Documentation page](#). If the security policy for your organization restricts Internet access, you can access the Kofax mobiFlow documentation offline. See [Offline mode](#).

### Full documentation set

The complete set of Kofax mobiFlow documentation is included in the following table.

Document	Description
Android Developer's Guide	Provides details about supported architectures, libraries, reporting issues, how to set up a custom capture user interface, and guidelines for successful capture.
iOS Developer's Guide	Provides information on project settings, use of various parameters of camera capture flow, and how to custom capture user interface setup.
Release Notes	Details the list of newly added features, resolved issues, known issues with applicable workaround, and the changes done since the previous release.
SDK Developer's Guide	Provides information on mobile capture parameters, licensing, collecting results, events and errors, look and feel, and guidelines for successful capture.
Technical Specifications	Describes the prerequisites including hardware, software, and third-party technologies to ensure proper functionality of the Kofax mobiFlow application.

## Offline documentation


To make the documentation available for use in offline mode, obtain the documentation files from the Kofax mobiFlow product package that you downloaded from the [Kofax Fulfillment Site](#). The file you need is KofaxmobiFlowDocumentation\_6.2.0\_EN.zip.

1. Extract the contents of KofaxmobiFlowDocumentation\_6.2.0\_EN.zip to a folder on your computer.
2. Copy the folder to a location that is accessible while you are working with Kofax mobiFlow.

## Getting help with Kofax products

The [Kofax Knowledge Portal](#) repository contains articles that are updated on a regular basis to keep you informed about Kofax products. We encourage you to use the Knowledge Portal to obtain answers to your product questions.

To access the Kofax Knowledge Portal, go to <https://knowledge.kofax.com>.

 The Kofax Knowledge Portal is optimized for use with Google Chrome, Mozilla Firefox, or Microsoft Edge.

The Kofax Knowledge Portal provides:

- Powerful search capabilities to help you quickly locate the information you need.  
Type your search terms or phrase into the **Search** box, and then click the search icon.
- Product information, configuration details and documentation, including release news.  
To locate articles, go to the Knowledge Portal home page and select the applicable Solution Family for your product, or click the View All Products button.

From the Knowledge Portal home page, you can:

- Access the Kofax Community (for all customers).  
On the Resources menu, click the **Community** link.
- Access the Kofax Customer Portal (for eligible customers).  
Go to the [Support Portal Information](#) page and click **Log in to the Customer Portal**.
- Access the Kofax Partner Portal (for eligible partners).  
Go to the [Support Portal Information](#) page and click **Log in to the Partner Portal**.
- Access Kofax support commitments, lifecycle policies, electronic fulfillment details, and self-service tools.  
Go to the [Support Details](#) page and select the appropriate article.

## Training

Kofax offers both classroom and online training to help you make the most of your product. To learn more about training courses and schedules, visit the [Kofax Education Portal](#) on the Kofax website.

## Chapter 1

# Mobile Capture parameters

This chapter describes the parameters used in the Mobile Capture module. The parameters include basic capture, validation, user interface, OCR, and output parameters.

## mobiFlow SDK version information

To get the mobiFlow version information, add the following API to your code.

Android:

```
MobiFlowSDKVersion.getTISMobiFLOWFullVersion()
```

iOS:

```
[TISMobiFlowWidget getTISMobiFLOWVersion]
```

## Basic parameters

This section describes the basic parameters of the Mobile Capture module.

### Document types

The following document types are available.

#### **Check (Cheque)**

This document type is used for checks. With this document type, MICR recognition and signature detection is possible and recommended.

- Turn the MICR configuration ON by setting the OCR Type to E13B, CMC7, or OCRA.
- When the MICR type is set, mobiFlow tries to recognize the MICR during the capture of the check. In video mode, MICR recognition occurs while the user hovers the device over the check in the correct position. If recognition fails several times, mobiFlow automatically switches to still mode. In still mode, mobiFlow tries to recognize the MICR only after the capture. An error message is displayed if the MICR cannot be read.
- If MICR recognition is successful, it indicates that the picture is sharp and of good quality.
- When MICR recognition is set to OFF, there is no blur/sharp validation of the picture that was taken.
- Detects whether the check issuer's signature is existing or missing on the check.



- Detection of the signature can be set on the front or back or both sides of a check.
- If a signature is not detected by capture, users get the option to continue with the check or re-capture the check again.
- Recommended orientation to capture is landscape.

### **Bill Payment (Stub)**

This document type is used for bill payment stubs (about a quarter to one-third the size of a full page).

## Debug mode

- This parameter should only be used during the testing or development stage.
- When set to **True**, mobiFlow saves all the result images and the captured image on the device, along with some logs. These are then available for submission to Kofax for further investigation in the case of bugs, or any unusual behavior in the library.

## Capture parameters

This section describes the capture parameters of the Mobile Capture module.

### Aspect ratio

This aspect ratio defines the size of the document that is captured and is calculated as the height of the document divided by the width of the document. For example:

- A document with a 6" width and 2.5" height has an aspect ratio of 2.5 divided by 6, which is 0.4166.
- A document with an 8.5" width and 11" height has an aspect ratio of 11 divided by 8.5, which is 1.29411.

The SDK has two parameters for the aspect ratio: Minimum and Maximum. This represents the size range within which the document must fall to be considered a valid document for capture. Aspect ratio is used to avoid capturing a document that is of the wrong size.

To set the minimum and maximum aspect ratio, take the calculated aspect ratio, then add about 10% for Maximum and subtract about 10% for Minimum. For example, for an aspect ratio of 0.4166, Maximum should be  $0.4166 * 110\% = 0.4582$ , and Minimum should be  $0.4166 * 90\% = 0.3745$ . If you still experience difficulties with capture, increase the threshold to 15%.

In still capture, the screen adjusts the frame that is displayed to the specified aspect ratio, and maximizes the space of the screen to the largest rectangle possible for capture in the desired orientation.

In live (dynamic) capture, when the user is in the right position to capture and if the document does not fit within the range of the aspect ratio that was set, the rectangle that is displayed around the document will not turn into a valid color (default: green) and will keep showing as an invalid color (default: red).

Defaults for the different document types:

Document type	Minimum aspect ratio	Maximum aspect ratio
Check*	0.35	0.50
Bill Payment	0.35	0.50

\* The defaults for a check are as per the size of the US checks.

**i** Do not rely on these defaults. You must ensure that the aspect ratio can accommodate the document size you are trying to capture. If you have different document sizes, just get the minimum and maximum from all the sizes combined.

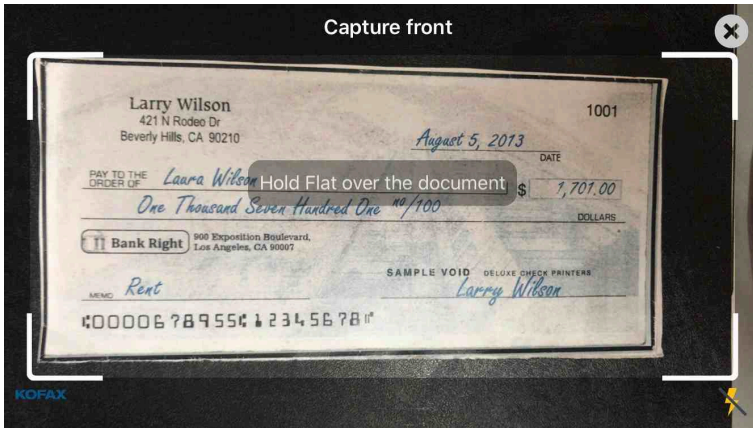
In live (dynamic) capture, if you set the minimum and maximum aspect ratio to 0.0, you can capture any size of document; the aspect ratio will not be validated. This can be a good choice when you have a large variety of documents with different sizes such as receipts.

## Capture type

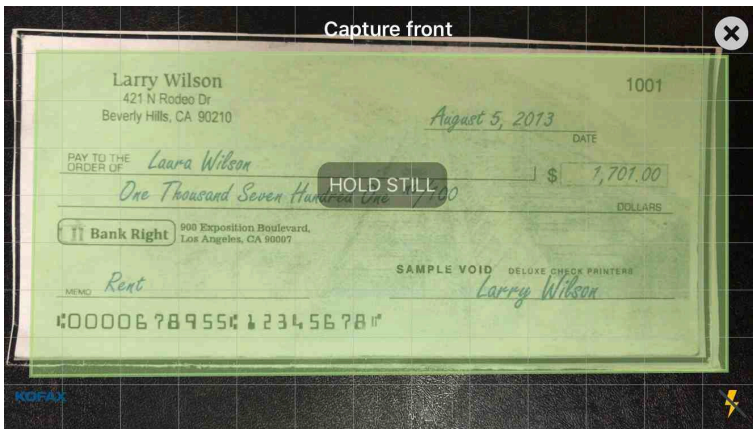
The parameter `uxType` can be set to either Live (Dynamic) or Static capture. In the Showcase, this is represented by Dynamic Capture turned ON or OFF.

Static capture shows a frame on the screen and the user must adjust the document within the frame for the picture to be taken automatically. The frame is displayed according to the aspect ratio that was set.

Live capture shows an empty screen with a grid and lets the user freely adjust the device to the document. mobiFlow displays a rectangle around the document once it is found, and the only thing the user must do is to get close enough to the document that mobiFlow can take the closest picture possible of the document.



### Static capture



### Live capture

## Video feed processing

Setting up this parameter (Enable Video Capture in Showcase) directs mobiFlow to use the video feed for capture instead of switching to still mode to take the picture.

The differences between the two modes are as follows:

- Still capture uses the full resolution of the camera, resulting in a better picture at a higher resolution. Video feed results in a lower resolution picture, however, this is still sufficient for OCR in most cases.
- Video feed capture is much quicker, one of the last frames of the video feed is used as the final image. In still capture, you need to switch from video capture once in a position to capture, then auto-focus and take the picture. Depending on the device, the capture may take another 1-3 seconds and during this time, there is the risk of the user moving while mobiFlow takes the picture, resulting in an error message.

- With still capture, all validations and OCR on the image are done after the picture was taken. With video feed capture, validation of blurriness and OCR recognition (in most cases) is done during the video session.

The following table summarizes the differences:

Still capture	Video capture
Highest camera resolution	Uses 1920x1080 resolution
OCR after capture	OCR during the video feed
Blur detection after capture	Blur detection during the video feed
Switch from video to still, auto-focus and then capture	Uses one of the last frames as the final image
The user must hold still for 1-3 seconds	The user must hold still for 1 second
Supported on all devices	Not supported on low end devices
Can be used for any sized document	Only recommended for documents smaller than half a page

**i** If a device does not support video capture, the SDK automatically defaults to still capture.

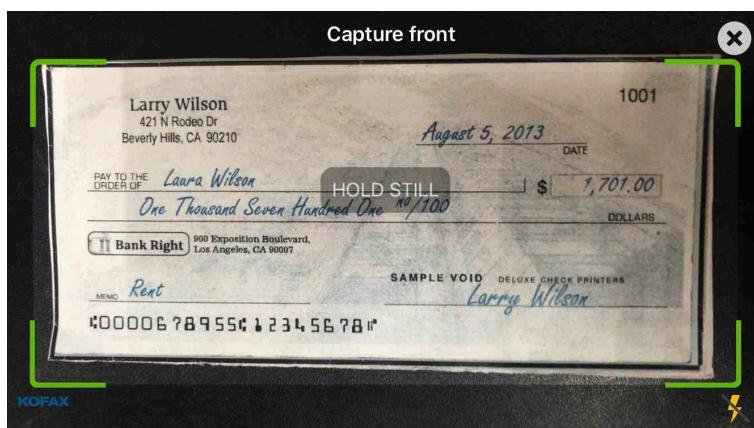
## Max video frame to capture

This parameter enables you to control which frame mobiFlow uses as the final image. Once mobiFlow finds a good frame, or the user is in the correct position, mobiFlow can check the specified number of frames before to that frame and take the best of those frames as the final image.

### Soft capture

Soft capture allows the user to capture the document while the device is held at an angle, rather than in a flat position over the document. This can be useful when direct light from above casts a shadow of the device over the document.

The following figure is an example of soft capture.



**i** Soft capture may also take a picture that can be somewhat distorted from the angle, as a result some data loss may occur, because mobiFlow needs to flatten the image into a rectangle from the trapezoid shape that resulted from the angled capture.

### Scan front only

mobiFlow is set up to capture documents assuming every document is two-sided, so every session is composed of front-side capture followed by back-side capture. Setting this parameter to **True** directs mobiFlow to capture only the front side.

This parameter can also be used when capturing two-sided documents but splitting the capture to different sessions for the front and the back.

### Scan back only

mobiFlow is set up to capture documents assuming every document is two-sided, so every session is composed of front-side capture followed by back-side capture. Setting this parameter to **True** directs mobiFlow to capture only the back-side.

This parameter can also be used when capturing two-sided documents but splitting the capture to different sessions for the front and the back.

## Validation parameters

This section describes the validation parameters of the Mobile Capture module.

### Blur detection

Blur detection only applies to the document types: Bill Payment.

mobiFlow can validate that the picture that was taken is not blurry and show an error message in case it is. This validation can be enabled or disabled.

**i** For the Check document type, the sharpness is already verified when the MICR is read successfully.

### Image quality assurance (IQA)

IQA validations only apply to the Check document type and should only be enabled for checks.

All IQA validations run on the black and white TIFF image that is generated by mobiFlow, so the output of the B&W image configuration must be enabled to run IQA validations.

As most of the validations are in inches and not pixels, the size of the document is calculated according to the size of the MICR height. The MICR height is a constant and is the same for all checks, so mobiFlow can find out the size of the total check accordingly and validate measurements in inches.

For all IQA parameters below there are defaults that are set up to be aligned with US Federal Reserve Bank regulations for Check 21 compliance. So, there is no need to change them unless

you want to make them more restrictive. For all other countries, you should change the settings according to specific regulations of the country. For a list of all the defaults, refer to the IQA parameters section, in the *Kofax mobiFlow Android Developer's Guide*.

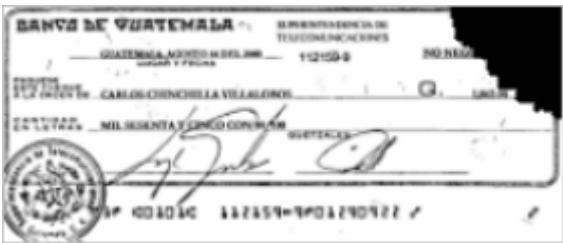
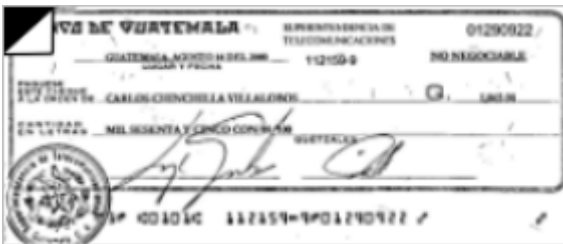
### Enable IQA

Gives the option to enable or disable the IQA validations for the check. Enable IQA to complete all the validations below.

### Folded or torn corners

You can set different thresholds for each corner of the check separately for the front and the back – a total of 8 corners. Each corner is defined as the height and width in inches along with the total area of the triangle that is created from the missing corner in square inches.

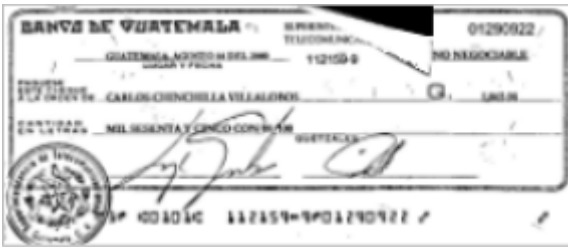
The validation runs on each corner and checks that each one is within the thresholds of the height, width, and total missing area. If any of the validations fail, mobiFlow generates a corner validation error. This is a general message that does not specify which corner is the problematic one.



### Folded or torn edges

You can set different thresholds for each edge of the check both for the front and the back – a total of 8 edges. Each edge is defined as the height and width in inches along with the total area of the triangle that is created from the missing edge in square inches. Be aware that missing edge may not be in the shape of a triangle but this is the way it is measured to be the closest to correct measurement.

The validation runs on each edge and checks that each one is within the thresholds of the height, width and total missing area. If any of the validations fail, mobiFlow generates an edge validation error. This is a general message that does not specify which edge is the problematic one.



### Skewing

You can define the maximum skew angle for a picture that is captured with an angle. The specified angle applies to both a positive and a negative angle. For example, if you set an angle of 5 degrees, it will validate 5 degrees to the right and 5 degrees to the left (5 and -5). If the image is skewed more than the threshold, mobiFlow generates a skew issue error.



### Brightness and darkness

You can define thresholds for darkness and brightness for each side (back and front). Thresholds are defined as maximum and minimum darkness. The threshold for the front and the back can be different.

The darkness is calculated as the number of black pixels versus the total pixels on the image, in percent (a number between 0.0 and 1.0). If the image exceeds the maximum threshold or is below the minimum threshold, mobiFlow generates a darkness/brightness error.

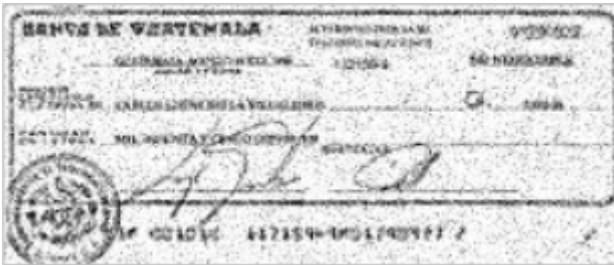






### Noise/spots

For each side, you can define the threshold for acceptable noise. The noise is defined as the number of spots per square inch, where each spot is considered any contiguous group of less than 20 black pixels surrounded by white pixels, that is, an island of 20 or less connected black pixels. Anything more than 20 connected black pixels is valid data. If the image exceeds the threshold for the number of spots detected in one of the square inches, mobiFlow generates a noise validation error.



### File size

You can define the minimum and maximum acceptable file size for the front and the back of the B&W TIFF image. If the file size does not lie between the thresholds, mobiFlow generates a file size error message.

## Minimum requirements

Minimum requirements only apply to Android devices. Refer to the *Kofax mobiFlow Technical Specifications* for information about the minimum requirements for the camera and CPU.

### Camera

If the camera on the device does not meet the minimum requirements for the camera MP, mobiFlow generates a Camera not supported error. mobiFlow will not start at all, and no camera preview session will be displayed.

### Auto-Focus

If the camera on the device does not meet the minimum requirements for the camera auto focus feature, mobiFlow generates an "Auto focus" camera error. mobiFlow will not start at all, and no camera preview session will be displayed.



### **CPU**

If the device does not meet the minimum requirements for the CPU speed, mobiFlow generates a CPU speed support error. mobiFlow will not start at all, and no camera preview session will be displayed.

## MICR length

This validation is only relevant for the Check document type.

The validation applies when MICR recognition is enabled and is defined with two parameters for minimum and maximum length. In video feed processing, it will be validated on the video session while the MICR is being read from the video feed. In stills capture, it will be validated only after the capture itself and can generate an error message if the MICR length is not between the minimum and maximum thresholds.

In video feed processing, if the MICR is not found, mobiFlow will switch to still capture and take the picture, because mobiFlow assumes the video is low resolution. In this case, an error message can be generated if the validation failed after the stills capture.

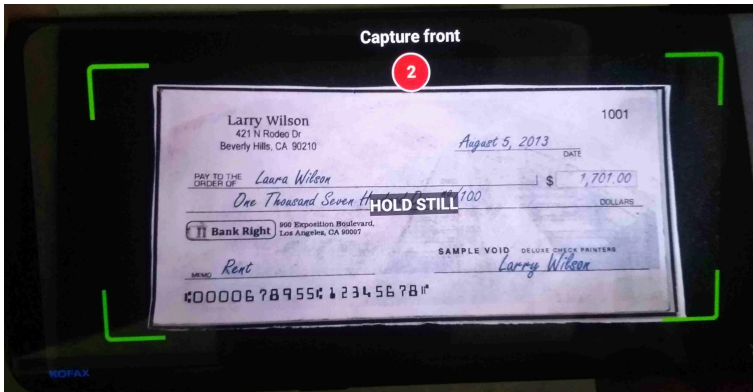
## User interface parameters

This section describes the user interface parameters of the Mobile Capture module.

### Countdown

The Countdown parameter is only relevant when using still capture (video feed processing is off), or when mobiFlow defaults to still capture because video mode is not supported on the device's camera.

The countdown shows when the HOLD STILL message is present. During the countdown mobiFlow switches from the video feed mode to still mode, auto-focuses on the document, and takes the picture of the document. The countdown indicates how long the users must hold the device before they can move away from the document. Sometimes the countdown can take longer than the time it takes the device to perform those steps, so make sure the countdown is not set to too many or too few seconds.



### Static Capture Countdown

The Countdown parameter has the following additional configurations.

#### Show countdown

When set to **True** the countdown is displayed on the screen.

When set to **False**, there is no countdown, and the HOLD STILL message appears. The HOLD STILL message remains on the screen until mobiFlow switches from video feed to still capture, focuses on the document, and takes the picture.

#### Countdown start and stop values

Relevant only when "Show countdown" is set to **True**.

The Countdown start and Countdown stop parameters specify the number from which the countdown starts and the number at which the countdown stops. Be aware that the countdown is in seconds, and sometimes the capture may be quicker than the countdown. Make sure to test that the countdown is not too long, we recommend 3 seconds.

#### Countdown sound

Relevant only when "Show countdown" is set to **True**.

When set to **True**, a beep sound occurs for every count. When set to **False**, no sound occurs.

The sound can be configured with any sound file.

## Default processing view

When the default processing view is set to **True**, a red spinner (see figure below) is displayed on the screen after the picture is taken and while mobiFlow is processing the image (cropping and creating grayscale and B&W images from the original image and running OCR if needed).



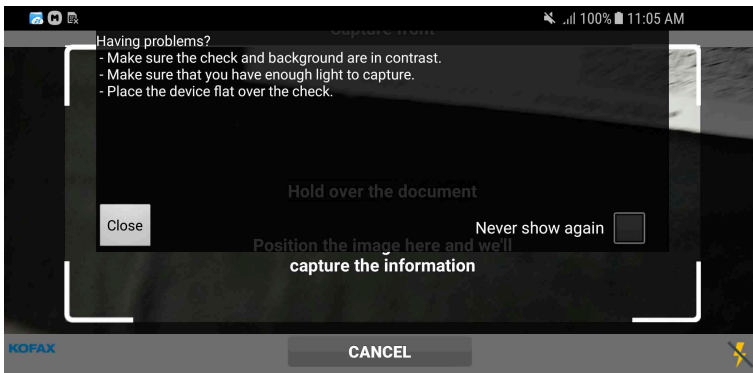
### Live capture default processing view

When set to **False**, no spinner is displayed on the screen. In this case, we recommend that you show your own spinner (perhaps one that is aligned with the rest of your app), otherwise it will appear that the screen is stuck, and nothing is happening while the image is being processed.

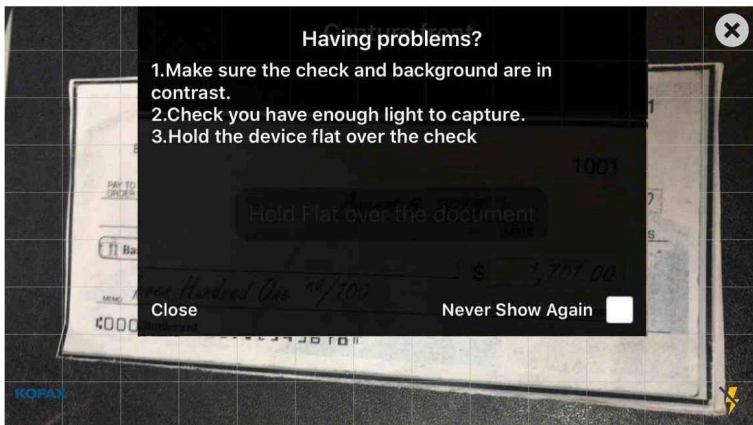
## Info screen

The Info screen is a popup that drops down from the top of the screen when the user has difficulty capturing the document within a reasonable time. The contents and layout of this popup are fully customizable to fit the look and feel of the hosting app.

The screen also contains a **Close** button to dismiss the popup, and a **Never Show Again** option that allows the user to suppress this popup for future captures.



### Static capture info screen



### Live capture info screen

The text in the static and live capture info screen is fully configurable and the look and feel is customizable (color, fonts, size, locations, and more).

The following parameters control the behavior of the Info screen.

#### Enable Info screen

When set to **True**, the info screen is displayed according to the interval set and in case the user has not seen this screen before and chose not to show it again.

When set to **False**, the info screen is not displayed.

#### Info screen interval

The number of seconds from the time the capture preview screen appears until the info screen is displayed. The info screen is displayed only if the user is not able to lock in position and successfully have mobiFlow take the picture of the document before that number of seconds passed. The recommended interval is 10 seconds.

## Show guidelines indicators

Guidelines indicators such as Move Left or Move Lower, are hints that user sees on the screen. They guide the user to the correct position so that mobiFlow can take the picture of the document. This setting does not affect the HOLD STILL message that appears when mobiFlow detects that the user is in the right position to take the picture.

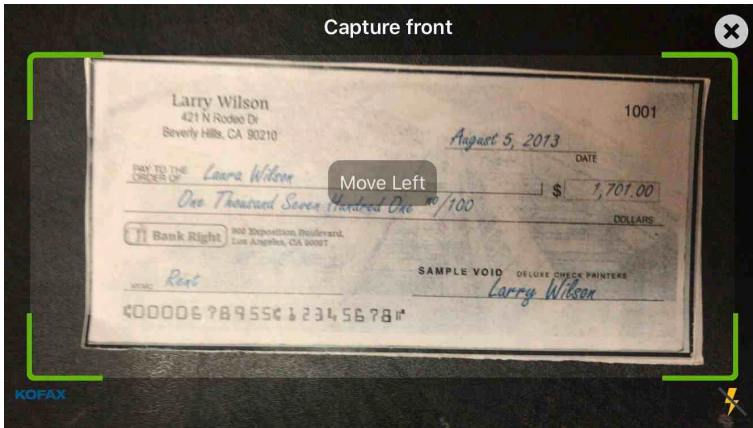
The following indicators are available and configurable.

Indicator	Description
TISFlowIndicatorAlign	Indicator to hold the device flat over the document.
TISFlowIndicatorDown*	Indicator to move the device towards the bottom of the document.
TISFlowIndicatorLeft*	Indicator to move the device left.
TISFlowIndicatorRight*	Indicator to move the device right.
TISFlowIndicatorTop*	Indicator to move the device towards the top of the document.
TISFlowIndicatorRotateLeft*	Indicator to rotate the device left (document is at an angle).
TISFlowIndicatorRotateRight*	Indicator to rotate the device right (document is at an angle).
TISFlowIndicatorZoomIn	Indicator to move closer to the document (document is too far from the frame).
TISFlowIndicatorZoomOut*	Indicator to move away from the document (document is exceeding the frame).
TISFlowIndicatorLight	Indicator to turn on the flash (there is not enough light).
TISFlowIndicatorHold	Indicator to hold the camera when the document is found before the picture is taken.
TISFlowIndicatorScanBarcode	Indicator to move towards the barcode.

\* Only relevant to static capture, the hint is not shown in live (dynamic) capture.

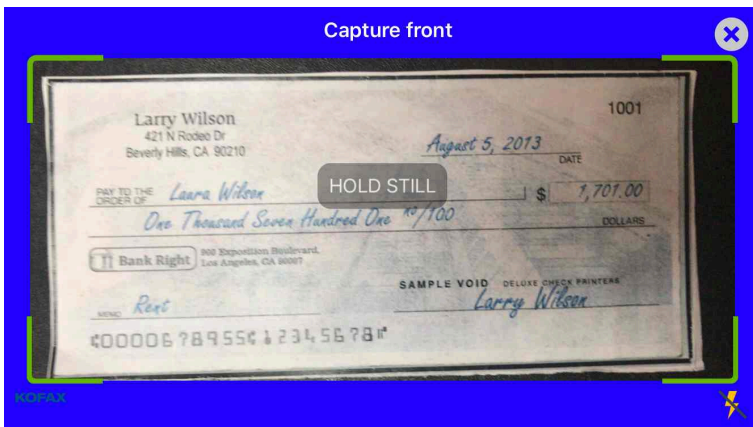
When set to **True**, all guidelines are shown on the screen to guide the user.

When set to **False**, only one guideline is displayed and stays constant on the screen, to give the user some guidance. When the check is in position, the HOLD STILL message appears.



## Surrounding color for document frame

This parameter is relevant only for static capture and enables you to change the color of the screen that is shown around the capture preview frame. See the following figure for example, which is of blue surrounding color.



## Leveler

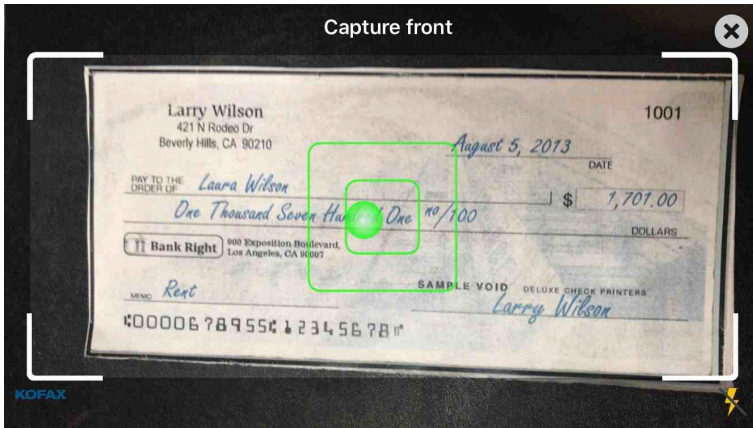
The leveler is a graphic indicator that can be shown on the capture preview to indicate that the device is being held flat over the document and not at an angle (tilted).

You can enable or disable the leveler by setting the enableLeveler parameter. Three types of levelers are available.

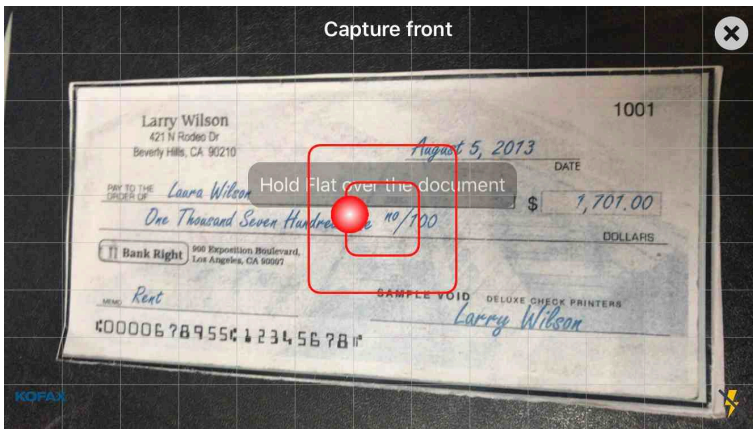
### One unit leveler

This leveler is designed as two squares and a ball. The ball moves around in red color when the device is tilted but comes to the center and turns green when the device is flat.

**i** For the leveler to work properly the device must have magnetometer sensors.



### Static capture (leveled)

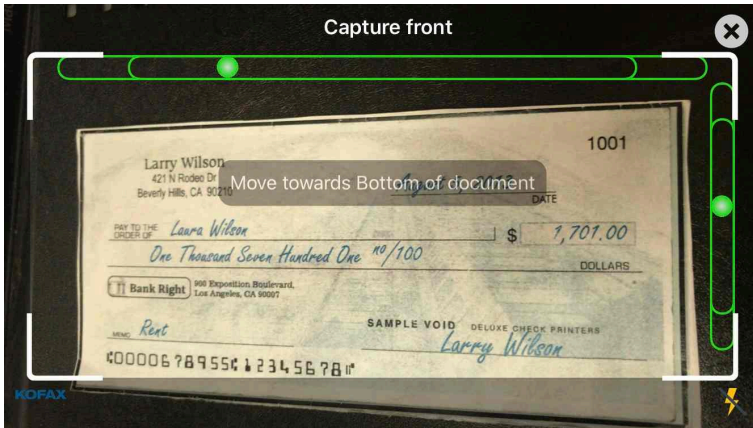


### Live capture (unleveled)

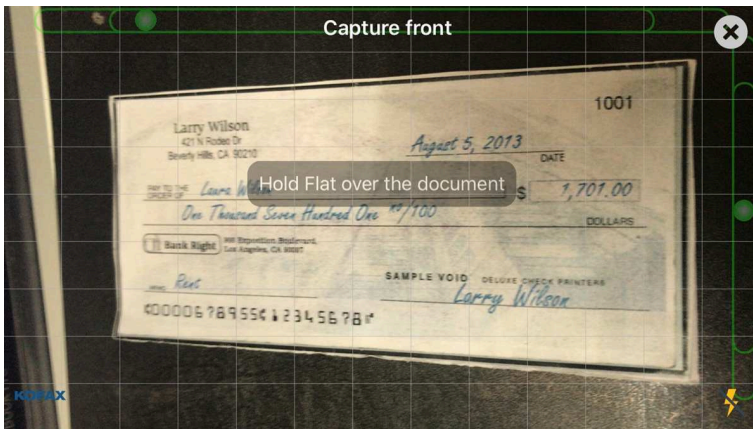
#### Two units leveler

This leveler is designed as two bars that can appear on two edges (top/bottom and left/right). Each bar has a ball inside it, that controls the horizontal or vertical motion of the device. The ball turns green when the device is tilted horizontally and turns red when tilted vertically.





### Static capture (leveled)

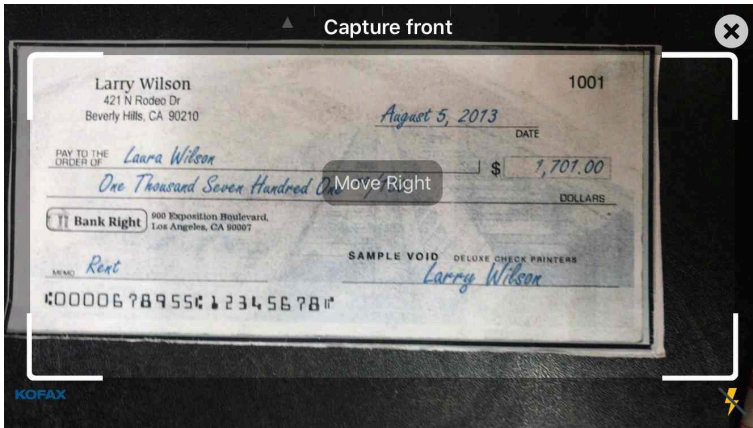


### Live capture (leveled)

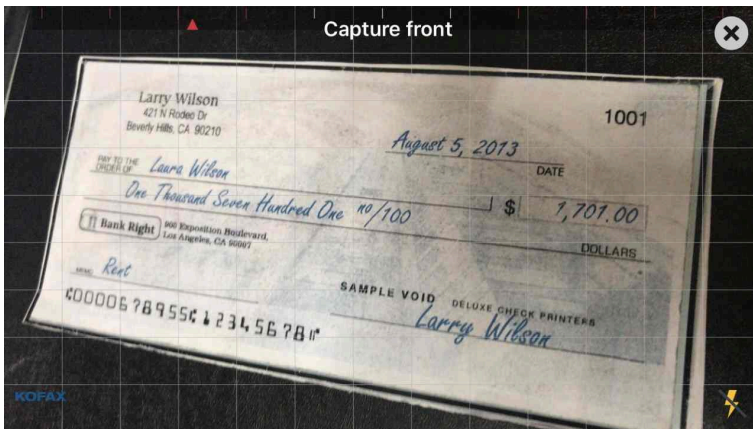
#### Scale leveler

This leveler is designed as one or two bars displayed on the edges of the device. Each bar has a triangle pointer that moves along the bar as the device is tilted. Each bar works on one layer only, either horizontal or vertical and changes the color between red when the device is tilted and white when the device is balanced in that layer.





Static capture (leveled horizontally)



Live capture (unleveled vertically)

### Leveler parameters

All three levelers have some common parameters and some unique parameters specific to the leveler.

The following parameters can be adjusted for all levelers.

Parameter	Description
Enable Fadeout	When set to <b>True</b> , the leveler fades out from the preview screen to make the screen clear for the capture. When set to <b>False</b> , it stays on the screen even if the device is balanced through the entire capture phase.
Enable Dragging	When set to <b>True</b> , the user can drag/move the leveler position when it is displayed on the screen. When set to <b>False</b> , no dragging is possible, and the leveler remains static on the screen.

Parameter	Description
Rectangle Size	Relevant for "One unit leveler" only. The size of the leveler rectangle (ranges between 80.0) and the height of the capturing frame.
Rectangle Center	Relevant for "One unit leveler" only. Indicates the location of the leveler's center on the screen.
Alignment to Frame	Relevant for "Two units leveler" and "Scale leveler" only. The alignment of the two leveler units to the capturing frame: <b>topLeft, bottomLeft, topRight, bottomRight</b> .
Leveler Thickness	Relevant for "Two units leveler" and "Scale leveler" only. The thickness of the leveler units' frames (between 10.0 and 30.0).
Padding from Frame	Relevant for "Two units leveler" and "Scale leveler" only. The distance of the leveler units' rectangles from the capturing frame.
Leveler Display	Relevant for "Scale leveler" only. Defines where the leveler will be presented on the screen: both scales, horizontal, vertical, or none.
Scale Unit Gap	Relevant for "Scale leveler" only. The distance between the leveler's units.
User Colors in Scale	Relevant for "Scale leveler" only. Customize the scale leveler and set its colors – can be set to multi colors or a single color.

## Dynamic strings

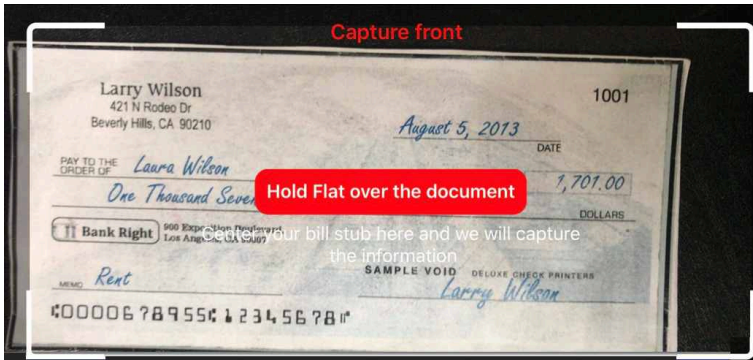
In development time, the hosting app can change and set up all the captions and messages that mobiFlow uses on the capture screen, and on errors and alerts that are displayed during the session.

This parameter allows you to override any parameter that was set up in development time by setting it up while the app is running. For example, get the messages from a web service and apply them, or change them according to the user type. This gives you control and flexibility over the UI at runtime.

## Custom view

Custom view allows you to change the look and feel (user interface) of the capture and info screens. You can change or hide some elements on the screen and add your elements.

Here is an example of how you can change the look and feel of the screen.



The implementation is different for Android and iOS, so refer to the appropriate developer guide for more information.

## OCR parameters

This section describes the OCR interface parameters of the Mobile Capture module.

### Barcode

The SDK allows you to recognize the barcode on the document while this option can be turned on or off.

#### Barcode type

You can define the type of barcode you want to recognize. You can set it up for a specific type or a range of several different types from which it will be detected.

The following barcode types are available:

- Aztec
- Code39
- Code39Mod43
- Code93
- Code128
- DataMatrix
- EAN8
- EAN13
- Interleaved2of5
- ITF14
- PDF417
- QR

### Barcode location

You can set the location of the barcode to be on the front or the back side of the document or on both sides. Setting barcode location to **None** disables the barcode recognition.

## OCR type

Several OCR types that can be set up, and each one is associated with a specific document type.

### Check

- MICR E13B: US, Canada, UK, Australia, and others
- MICR CMC7: European countries, Brazil, Mexico, Israel, and others
- MICR OCRA: A few countries and bills
- MICR UNKNOWN: When it is not known exactly which MICR type to capture

### All document types


- OFF: No OCR recognition occurs

When working in Video feed processing, mobiFlow gives you the option to validate the OCR recognition and accept or reject it. If rejected, the user will have to try and align the device for another capture.

## Output parameters

This section describes the output parameters of the Mobile Capture module.

mobiFlow generates several different images as the output and allows you to control the output you want to receive as a result. Each one of the images can be enabled or disabled as an output.

 A true 200 dpi adjustment in terms of the image dimensions applies to the Check document type only.

This is because on a check the code line is a fixed height that allow us to determine the real size of the document in cm/inches, and therefore can adjust the size of the document to a true 200 dpi (as dpi is measured by inches and not pixels). For all other document types, the dpi tag is set to 200 dpi but no adjustment to the actual image dimensions is applied, therefore the actual dimensions of the image are not truly 200 dpi.

DPI is a term that came from the printing and scanning world, where we can measure the document in the printer or scanner and decide how many dots to print or scan per inch. In the Capture world, it loses its meaning since we do not have the tools to measure the actual size of the document just from a picture unless we have some known anchor.

## Original image

This is the original image as it was captured from the camera preview screen including the background. This image is in color and JPEG format.

## Color image

This is the cropped color version of the original image. It contains only the document without the background after it is cropped from the picture that was taken. This image is in color and JPEG format.

### **Color compression threshold**

This is the level of compression that will be applied to the color image. Use it if you want to reduce the file size of the color image in exchange for a reduction in quality. The threshold can be set between 1.0 which is the best quality (no compression) and 0.0 for the lowest quality (maximum compression).

## Grayscale image

This is the cropped grayscale version of the cropped color image. It contains only the document without the background after it was cropped from the picture that was taken and then converted to grayscale and adjusted to 200 dpi or the grayscale size. This image is in grayscale and JPEG format.

### **Grayscale compression threshold**

This is the level of compression that will be applied to the grayscale image. Use it if you want to reduce the file size of the grayscale image in exchange for a reduction in quality. The threshold can be set between 1.0 which is the best quality (no compression) and 0.0 for the lowest quality (maximum compression).

## Black and white image

This is the B&W (black and white) version of the cropped color image. It also contains only the document without the background. This image is in B&W and TIFF format CCITT 6.0 Compression group 4 in 200 dpi. On Android, this image is also in JPEG format for display purposes (as Android does not support image display in the TIFF format).

### **Binarization Threshold**

This is the strength of the binarization that will be applied while converting the image to a B&W image. It can be set between 0.01 (lightest) to 1.0 (darkest/boldest) or to 0.0, which directs mobiFlow to use internal optimization for the threshold.

This should be set only if you are using a one-sided or one-page document that is always the same, as setting the threshold to different types of documents will not achieve the desired output, and in this case, it is better to leave it to the optimization algorithm.

## Grayscale size

This allows you to scale the grayscale image to a certain height and width if required. If this parameter is set to a value other than (0,0) it will be scaled accordingly.

## Binarize the back same as the front

If set to **True**, the same binarization algorithm is used on the front page as on the back page.

If set to **False**, in some cases (for specific document types) a different algorithm is run on the back side of the document.

A good example is the Check document type which has a different algorithm for front and back.

## Binarization type

This is relevant only when using the Custom document type.

It allows you to choose between the general binarization that is used for most documents or the check binarization that is used specifically for checks.

## Front image size

This is relevant only when using the Check document type.

It is relevant if you use split capture to capture the front and back of the check separately in two different sessions. In this case, the size of the image of the back side must be adjusted to the size of the image of the front side for IQA. Therefore, when capturing the front, we will get this information in the results and will pass it for the back capture session so the adjustment in the size of the back will take place for a valid IQA result.

## Chapter 2

# Licensing

Each version of mobiFlow requires a license. If a license is not configured, mobiFlow shows an error on the device's screen and does not start the capture process.

The license is individual per implementation and is a combination of the customer's name, the license key, and the license itself. The license can have an expiration date or can be unlimited.

The license is valid per mobiFlow version and can only be used on that version, upgrading to a newer version requires a request to Kofax to generate a new license.

The following three values must be initialized with the license information that you receive from Kofax. Refer to *Kofax mobiFlow iOS Developer's Guide* or *Kofax mobiFlow Android Developer's Guide* for more details.

Value	Description
Licensee	The name of the licensee that this license is associated with. Usually this will be the customer's name or the project name.
License Key	A unique key that is given to each license or customer.
Active License	An encrypted string that contains the license information.

## Chapter 3

# Collecting results

Each successful capture will generate the output according to the settings of the output parameters.

Each result will include four images for the front and four images for the back. In Android, there is an additional image for the front and back, which is the JPEG representation of the B&W Tiff image. This is required to be able to display the image on Android, as Android does not support the display of Tiff images.

Available images:

- Original Color
- Cropped Color
- Cropped Grayscale
- Cropped B&W
- Tiff Cropped B&W Jpeg (Android Only)

Each set is available for the front and the back. In the case of front capture only, or back capture only, the images for the irrelevant side remain empty (null). They are also empty if they were excluded from the output in the settings.

## Barcode results

If barcode recognition is set up, the results of the barcode are available both for the front and back. For each side, the barcode recognition result is available as a string, along with the barcode type that is detected.


For barcode PDF417, additional parsing is available when the results come from a US/Canada driver's license. See [Card results](#) for more details.

## Check results

If OCR recognition is set up and the document type is "Check", the OCR results are available as part of the results.

Results available for Check



Parameter	Description																																				
result	<p>The MICR result formatted in mobiFlow format.</p> <p> The special characters are represented by a dash.</p>																																				
rawResult	<p>The result, where every character in the MICR is represented by a number, separated by commas 0,1,2,3,4,5,6,7,8,9,10,12,11,13 Numbers represent the MICR in the order given in the table.</p> <table border="1"> <tbody> <tr> <td>Character</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>MICR</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>Character</td> <td>8</td> <td>9</td> <td>0</td> <td>/</td> <td>;</td> <td>:</td> <td>-</td> <td></td> </tr> <tr> <td>MICR</td> <td>8</td> <td>9</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </tbody> </table>	Character	0	1	2	3	4	5	6	7	MICR	0	1	2	3	4	5	6	7	Character	8	9	0	/	;	:	-		MICR	8	9	0	1	2	3	4	5
Character	0	1	2	3	4	5	6	7																													
MICR	0	1	2	3	4	5	6	7																													
Character	8	9	0	/	;	:	-																														
MICR	8	9	0	1	2	3	4	5																													
resultsScores	The score for each one of the recognized characters is separated by commas, respectively to the rawResult.																																				
signatureOverCMC7MicDetected	Indicates if a signature was detected on the CMC7 MICR.																																				

## Chapter 4

# Events and errors

mobiFlow gives you the option to catch different errors and events while letting you handle the behavior of your app when such errors and events occur.

## Error handling

mobiFlow can throw any of the following errors (most of them related to the validations).

The order in which the validations run is different when using stills mode and video mode, and so are the messages that are used. The following table shows the order of the validations and their application per document type and capture mode.

Validation description	Validation error code (enum)	Error message name	Display message (iOS) or Message on video feed processing (Android)	Message on stills
Image Contrast	TISFlowErrorImageContrast	TISFlowErrorImageContrast	NO*	YES
Blur Detection**	TISFlowErrorBlurDetected ERROR_BLUR_DETECTED	TISFlowErrorBlurFail	NO*	YES
Look For Document Rectangle	TISFlowErrorNoValidBoundingBox ERROR_NO_VALID_BOUNDING_BOX	TISFlowErrorNoValidBoundingBox	NO*	YES
The user is capturing the front side instead of the back side of the check***	TISFlowWarningMICRDetectedOnCheckBack ERROR_MICR_ON_BACK	TISFlowWarningMICRDetectedOnCheckBack	YES	YES
OCR Validation	TISFlowErrorOCRReadingCheck ERROR_OCR_READING	TISFlowErrorReadingMessage TISFlowErrorReadingOCRMessage	YES NO	YES

Validation description	Validation error code (enum)	Error message name	Display message (iOS) or Message on video feed processing (Android)	Message on stills
MICR Length Validation***	TISFlowErrorMICRLength ERROR_MICR_LENGTH	TISFlowDigitalRowNotInScope TISFlowErrorReadingMessage	YES	YES
MICR Line Interruption By Signature.CMC7 Only***	TISFlowWarningMicrInterrupted ERROR_MICR_INTERRUPTED	TISFlowWarningMicrInterrupted TISFlowMicrInterrupted	YES	YES
IQA Folded Corner***	TISFlowErrorIQACornerData ERROR_IQA_CORNER_DATA	TISFlowErrorIQACornerData	YES	YES
IQA Folded Edge***	TISFlowErrorIQAEdgeData ERROR_IQA_EDGE_DATA	TISFlowErrorIQAEdgeData	YES	YES
IQA Skew***	TISFlowErrorIQA Skew ERROR_IQA_SKEW	TISFlowErrorIQA Skew	YES	YES
IQA Darkness***	TISFlowErrorIQA Darkness ERROR_IQA_DARKNESS	TISFlowErrorIQA Darkness	YES	YES
IQA Number of Spots***	TISFlowErrorIQA NumSpots ERROR_IQA_NUM_SPOTS	TISFlowErrorIQA NumSpots	YES	YES
IQA Horizontal Streaks***	TISFlowErrorHorizontalStreaks ERROR_IQA_HORIZONTAL_STREAKS	TISFlowErrorHorizontalStreaks	YES	YES
IQA Carbon Strip***	TISFlowErrorCarbonStrip ERROR_IQA_CARBON_STRIP	TISFlowErrorCarbonStrip ERROR_IQA_CARBON_STRIP	YES	YES
IQA Piggy Back***	TISFlowErrorPiggybackFound ERROR_IQA_PIGGY_BACK	TISFlowErrorPiggyback	YES	YES

\* When no message is thrown, mobiFlow proceeds to process the next frame.

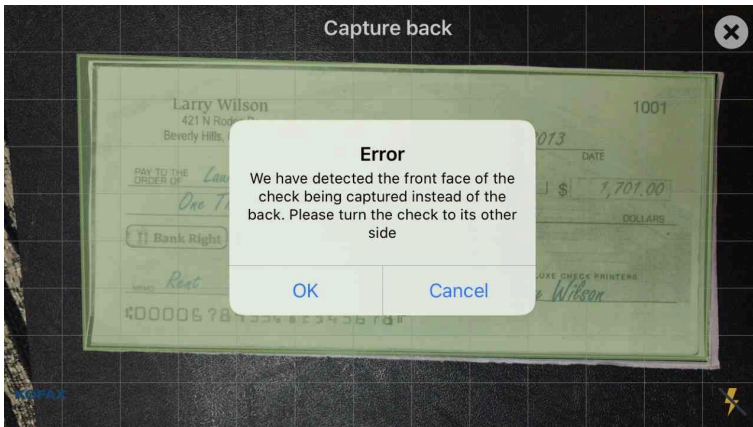
\*\* Enabled on documents without OCR.

\*\*\* Checks only.

**i** IQA validations are performed only for Checks and on B&W images.

The errors are generated in the order within the table. Each error has an enum associated with it and an error message that can be set up to be shown if that error occurred.

Here is an example of how an error is handled by mobiFlow.



There are three ways to handle each error:

- **mobiFlow Handles:** Default message alerts are displayed set up by mobiFlow (the text of the message can be changed by the app) and the user will have another attempt to capture.
- **Close Session:** The app handles the error and closes the capture session. The user does not have another attempt to capture. The capture session is over.
- **App Handles:** The app handles the error by showing its customized alert, or any other way, and returns the control to mobiFlow for another capture attempt.

## Events handling

mobiFlow handles events on iOS and Android a bit differently. Refer to the *Kofax mobiFlow iOS Developer's Guide* or *Kofax mobiFlow Android Developer's Guide* for more information.

### Hint changed

This event is fired when each of the hints/guidelines on the screen changes. It is fired many times just before it changes. This allows you to control the label of the hint and change any of its properties at runtime, such as font, color, location, text, and accessibility settings.

### Validating OCR results

This event is fired only when video feed processing is enabled, and OCR recognition is not OFF. You receive the OCR recognition result from the selected frame and have the option to analyze the result and then accept it or reject it. If accepted, mobiFlow continues with the selected frame and continues processing the image. If rejected, mobiFlow tries another frame and fires the OCR results

from that frame to this event again. If all frames have been rejected, mobiFlow switches to stills capture to take the picture at a higher resolution.

**Processing events**

This is a series of events that can be fired as the image is processed. mobiFlow issues notifications about when the countdown started and finished and when the processing of the image started and finished. In this event, it is common to implement your spinner that will be shown on the screen while mobiFlow processes the image.

**Capture back (Android only)**

This event is fired when the front side capture ends before switching to capture the back side.

**Back button pressed (Android only)**

This event is fired when the user presses the back button on the device while on the capture screen. In this event, you can cancel the back action, or accept it and close the capture screen.

**Initialize layout (Android only)**

This event is fired when the screen is initialized or refreshed.

## Chapter 5

# Look and feel

The entire user interface within mobiFlow is completely customizable to match the look and feel that you want to align with the scheme of your application.

The only thing that is not adjustable is the space needed on the screen for the capture. mobiFlow maximizes the capture area to take a picture at the highest possible resolution, so changes over the capture area are not recommended.

The Custom view gives you the ability to control some of those changes, but not all. Other changes can be made at runtime or development time by changing the resources that are supplied with the SDK.

Following are some examples of elements that can be changed or controlled:

- Changing any caption or text that appears anywhere in mobiFlow, including all alerts.
- Changing font and colors of hints/labels.
- Changing any image or icon that appears on the screen.
- Changing the frame of the static capture.
- Accessibility settings of labels and alerts.
- Hiding any elements from the screen.
- Adding new elements to the screen.
- Creating your own waiting/processing indicator/spinner.
- Changing the countdown sound file.
- Changing the color of the invalid and valid rectangle in live capture.
- Changing the look and feel of the info screen.

Refer to *Kofax mobiFlow iOS Developer's Guide* or *Kofax mobiFlow Android Developer's Guide* for more information and examples of how to customize mobiFlow and use the custom view.

## Chapter 6

# Guidelines for successful capture

To ensure successful and optimal capture from the mobiFlow library, you should include the following guidelines in your application's instructions, which should be followed before the user starts the capture process. These guidelines are not mandatory, and a document can still be captured even if the guidelines are not followed but following them will ensure optimal capture and the best result.

## Contrast

Position the document on a background with a different color. Avoid strong visual contrast near the document's boundaries. For documents with multiple colors around the boundaries, the document background should be a different color from any color on the document's boundaries.

## Background homogeneity

Keep the background clean and homogenous. Avoid strong lines on the background that do not belong to the document. Keep the surface around the document clear of any objects about 6" (15 cm) from each side of the document.

## Lighting

Avoid strong direct sunlight or artificial lighting on the document. Avoid strong light on one part of the document and shade over another part. Such a situation can result in an unusable black and white image of the part that is not in the shade.

## Shooting and rotation angles

Position the phone's camera as flat as possible relative to the document's surface. Moreover, the in-plane rotation of the camera should be similar to that of the document, that is, the picture should be taken in landscape. Position the document at the center of the screen, within the displayed frame, and as close as possible to the frame sides.

## Taking the picture

When the HOLD STILL message appears, stand still with the device over the document until the countdown is over and the still picture is taken. Moving or shaking during this process can result in a blurry image and leads to a failure or an unclear black and white image.

## Checks only: Digital row (MICR)

Make sure that the digital row is clean, and the signature is not stretching over it. Ensure that all the digits and special characters are readable.