CHAPTER 4 USER AND IMAGING PARAMETERS

Introduction

This chapter describes the programmable user preference and imaging parameters available via the *Software Decode SDK for Android* and includes the parameter numbers and option values to use.

NOTE Parameter bar codes found in other guides can not be used to program these parameters.

NOTE Some of the parameters in this chapter accept values which are non-contiguous. Entering unsupported values can cause unpredictable behavior.

User and Imaging Parameter Defaults

Table 4-1 lists defaults for all supported user and imaging parameters.

Table 4-1 *User Preferences and Imaging Options Default Table*

Parameter	Parameter Number (Decimal)	Default	Page Number
User Preferences			
Trigger Mode	138	Level	*4-3*
Picklist Mode	402	Disabled Always	*4-3*
Decode Session Timeout	136	9.9 Sec	*4-4*
Timeout Between Decodes, Same Symbol	137	0.6 Sec	*4-4*
Continuous Bar Code Read	649	Disable	*4-4*
Transmit Code ID Character	45	None	*4-4*
Transmit “No Read” Message	94	Disable	*4-5*
Fuzzy 1D Processing	514	Enable	*4-5*

Table 4-1 *User Preferences and Imaging Options Default Table*

Parameter	Parameter Number (Decimal)	Default	Page Number
Mobile Phone/Display Mode	716	0	4-5
Multi Decode Mode	900	0	4-6
Bar Codes to Read	902	1	4-6
Full Read Mode	901	1	4-6
Engine Orientation	624	Disable	4-6
Imaging Options			
Illumination Power Level	764	10	4-7
Thermal Management Mode	1894	Disable	4-7
Motion Detection Sensitivity	1943	High	4-7
Skip Stop Acquisition Command	1895	Disable	4-8
Decoding Illumination	298	Enable	4-8
Decode Aiming Pattern	306	Enable	4-8
Hands-free Decode Aiming Pattern	590	Enable	4-8
Image Capture Illumination	361	Enable	4-8
Motion Illumination	762	Enable	4-9
Snapshot Mode Timeout	323	0 (30 seconds)	4-9
Snapshot Aiming Pattern	300	Enable	4-9
Image Cropping	301	Disable	4-9
Crop to Pixel Addresses	315; 316; 317; 318	0 top, 0 left, 479 bottom, 751 right	4-9
Image Resolution	302	Full	4-10
Image File Format Selection	304	JPEG	4-11
JPEG Image Options	299	1 (Quality Value)	4-11
JPEG Quality Value	305	65	4-11
Image Enhancement	564	Off	4-11
Bits per Pixel (BPP)	303	8 BPP	4-11
Signature Capture	93	Disable	4-12
Signature Capture Image File Format Selection	313	JPEG	4-12
Signature Capture Bits per Pixel (BPP)	314	8 BPP	4-12
Signature Capture Width	366	400	4-13
Signature Capture Height	367	100	4-13

Table 4-1 *User Preferences and Imaging Options Default Table*

Parameter	Parameter Number (Decimal)	Default	Page Number
Video View Finder	324	Disable	*4-13*
Video Scaling	761	2	*4-14*
Retrieve Last Decoded Image	905	Disable	*4-14*

User Preferences

In this section, * indicates the default option.

Trigger Mode

Parameter # 138

Select a trigger mode:

- ***0 - Level** - A trigger event activates decode processing, which continues until the trigger event ends, a valid decode, or the decode session time-out occurs.
- **7 - Presentation Mode** - When the imager engine detects an object in its field of view, it triggers and attempts to decode. The range of object detection does not vary under normal lighting conditions. This applies to decode mode only.
- **9 - Auto Aim** - This trigger mode turns on the red laser aiming pattern when the imager engine senses motion. A trigger pull activates decode processing. After 2 seconds of inactivity the red laser aiming pattern automatically shuts off.
- **14 - Timed Release** - A trigger pull activates an aiming session and will continue until the trigger is released. When the trigger is released, a decode session will be started which continues until the trigger event ends, a valid decode, or the decode session time-out occurs.

Picklist Mode

Parameter # 402

Picklist mode enables the decoder to decode only bar codes aligned under the center of the laser aiming pattern. Select one of the following picklist modes:

- ***0 - Disabled Always** - Picklist mode is always disabled.
- **2 - Enabled Always** - Picklist mode is always enabled.
- **4 - Enabled Software Picklist** - Picklist Mode works via an approximation of the center of the field of view.

NOTES Picklist mode works via an approximation of the aiming pattern center. In most cases this approximation is fully accurate. However, decodes can occur when the target bar code is near but not directly under the center of the aiming pattern.

The Zebra SE2100 scan engine does not produce an aiming pattern. For this engine, Picklist Mode works via an approximation of the center of the field of view and therefore works best if the target bar code is placed in the center of the field of view.

Decode Session Timeout

Parameter # 136

Set the maximum time decode processing continues during a scan attempt, available in 0.1 second increments from 0.5 to 9.9 seconds. The default timeout is 9.9 seconds.

For example, to set a decode session timeout of 0.5 seconds, set this parameter to a value of **5**. To set a timeout of 2.5 seconds, enter the value **25**.

Timeout Between Decodes, Same Symbol

Parameter # 137

Use this option in presentation mode to prevent multiple reads of a symbol left in the imager engine's field of view. The timeout begins when you remove the symbol from the field of view.

Set the timeout between decodes for the same symbol, available in 0.1 second increments from 0.0 to 9.9 seconds. The default interval is 0.6 seconds. For example, to set this timeout to 0.5 seconds, enter a value of **5.** To set a timeout of 2.5 seconds, enter the value **25.**

Continuous Bar Code Read

Parameter # 649

Enable this to report every bar code scanned after Timeout Between Decodes, Same Symbol while the trigger is pulled.

NOTE Zebra strongly recommends enabling *Picklist Mode on page 4-3* with this feature. Disabling Picklist Mode can cause accidental decodes when more than one bar code is in the digital scanner field of view.

- ***0 - Disable**
- **1 - Enable**

Transmit Code ID Character

Parameter # 45

A Code ID character identifies the code type of a scanned bar code. This is useful when decoding more than one code type. In addition to any single character prefix already selected, the Code ID character is inserted between the prefix and the decoded symbol.

NOTE If you enable Symbol Code ID Character or AIM Code ID Character, and enable *Transmit "No Read" Message*, the decoder appends the code ID for Code 39 to the NR message.

Select one of the following Code ID options:

- ***0 - None**
- **1 - AIM Code ID Character**
- **2 - Symbol Code ID Character**

Transmit “No Read” Message

Parameter # 94

Select whether or not to transmit a No Read message.

NOTE If you enable **Transmit No Read**, and also enable Symbol Code ID Character or AIM Code ID Character for *Transmit Code ID Character*, the decoder appends the code ID for Code 39 to the NR message.

Select one of the following options:

- ***0 - Disable No Read** - the decoder sends nothing to the host if a symbol does not decode.
- **1 - Enable No Read** - the decoder sends the characters **NR** when a successful decode does not occur before trigger release or the **Decode Session Timeout** expires. See *Decode Session Timeout on page 4-4*.

Fuzzy 1D Processing

Parameter # 514

This option is enabled by default to optimize decode performance on 1D bar codes, including damaged and poor quality symbols. Disable this only if you experience time delays when decoding 2D bar codes, or in detecting a no decode

- **0 - Disable Fuzzy 1D Processing**
- ***1 - Enable Fuzzy 1D Processing**

Mobile Phone/Display Mode

Parameter # 716

NOTE The SE2100 does not support Mobile Phone/Display Mode.

This mode improves bar code reading performance on mobile phones and electronic displays. Enabling this mode improves accuracy by reducing the probability of no-decodes or mis-decodes, but may increase decode time.

Select one of the following options:

- ***0 - Disable Mobile Phone/Display Mode**
- **1 - Enable Mobile Phone/Display Mode**

Multi Decode Mode

Parameter # 900

This mode enables decoding multiple bar codes within the scanner's field of view. Select one of the following options:

- ***0 - Disable Multi Decode Mode**
- **1 - Enable Multi Decode Mode**

Bar Codes to Read

Parameter # 902

This parameter sets the number of bar codes to read when **Multi Decode Mode** is enabled. The range is 1 to 30 bar codes. The default is 1.

Full Read Mode

Parameter # 901

Select when to generate a decode event to the calling application when **Multi Decode Mode** is enabled.

- **0** - Generate a decode event after one or more bar codes are decoded.
- ***1** - Only generate the callback to **onDecodeComplete()** when at least the number of bar codes set in **Bar Codes to Read** are decoded.

Engine Orientation

Parameter # 624

Enable this to scan images in reverse, or mirrored, as if seen through a mirror. This mode is useful in applications requiring scanning through a mirror and using symbologies that do not decode in reverse. Enabling this mode when using snapshot, video, or video viewfinder mode transmits images as mirrored images.

- ***0 - Disable**
- **1 – Enable**

Imager Preferences

In this section an asterisk (*) indicates the default option.

Illumination Power Level

Parameter # 764

NOTE The SE2100 does not support Illumination Power Level.

The recommended Illumination Power Level value for the SE4710 is 2. Setting this parameter above 3 is not recommended unless all thermal issues are considered.

This parameter sets the level of illumination by altering laser/LED power. The default is 10, which is maximum illumination. For values from 0 to 10, illumination varies from lowest to highest level. This parameter affects both decoding and motion illumination.

Thermal Management Mode

Parameter # 1894

NOTE Only for SE4770, SE4720 and SE4750

Enable or disable thermal management mode. This mode auto adjusts the illumination and aim duration according to the engine temperature. Auto adjustment starts when engine temperature reaches 58 degrees C and continue until 73 degrees C. Illumination is turned off when engine temperature reaches 78-degree C.

- 1 - Enable
- *0 - Disable

Motion Detection Sensitivity

Parameter # 1943

NOTE Only for SE4770, SE4720 and SE4750

Controls motion sensitivity when presentation mode.

- *2 - High - Scanning is activated with high sensitivity to movement in the scanner field of view (default). Any slight movement in the field of view can activate the scanner.
- 1 - Medium - Scanning is activated with medium sensitivity to movement in the scanner field of view.
- 0 - Low - Scanning is activated with low sensitivity to movement in the scanner field of view. Fast movement in the field of view does not activate the scanner.

Skip Stop Acquisition Command

Parameter # 1895

NOTE Only for SE4770, SE4720 and SE4750

Controls acquisitions stop command to engine when decode session completes

- 1 - Enable
- *0 – Disable

Decoding Illumination

Parameter # 298

Enable or disable illumination:

- ***1 - Enable Decoding Illumination** - the decoder turns on illumination every image capture to aid decoding.
- **0 - Disable Decoding Illumination** - the decoder does not use decoding illumination.

Enabling illumination usually results in superior images. The effectiveness of illumination decreases as the distance to the target increases.

Decode Aiming Pattern

Parameter # 306

NOTE The SE2100 does not support Decode Aiming Pattern.

This parameter only applies in Decode Mode.

- ***1 - Enable Decode Aiming Pattern** - this projects the aiming pattern during bar code capture.
- **0 - Disable Decode Aiming Pattern** - this turns off the aiming pattern.

Hands-free Decode Aiming Pattern

Parameter # 590

NOTE The SE2100 does not support Hands-free Decode Aiming Pattern.

This parameter only applies in hands-free mode.

- ***1 - Enable Hands-free Decode Aiming Pattern** - projects the aiming pattern during hands-free mode.
- **0 - Disable Hands-free Decode Aiming Pattern** - turns off the aiming pattern during hands-free mode.

Image Capture Illumination

Parameter # 361

Enable or disable image capture illumination:

- *1 - **Enable Image Capture Illumination** - the decoder turns on illumination during every image capture.
- 0 - **Disable Image Capture Illumination** - prevents the decoder from using image capture illumination.

Enabling illumination usually results in superior images. The effectiveness of illumination decreases as the distance to the target increases.

Motion Illumination

Parameter # 762

This parameter only applies to hands-free and auto aim trigger modes.

- *1 - **Enable Motion Illumination** - turns on motion illumination in hands-free and auto aim trigger modes.
- 0 - **Disable Motion Illumination** - turns off motion illumination.

Snapshot Mode Timeout

Parameter # 323

This parameter sets the amount of time the decoder remains in Snapshot Mode. The decoder exits Snapshot Mode upon a trigger event, or when the Snapshot Mode Timeout elapses. The default value is 0 which represents 30 seconds; values increment by 30. For example, 1 = 60 seconds, 2 = 90 seconds, etc.

Snapshot Aiming Pattern

Parameter # 300

NOTE The SE2100 does not support Snapshot Aiming Pattern.

Enable or disable the Snapshot Aiming Pattern:

- *1 - **Enable Snapshot Aiming Pattern** - projects the aiming pattern when in Snapshot Mode.
- 0 - **Disable Snapshot Aiming Pattern** - turns the aiming pattern off.

Image Cropping

Parameter # 301

Enable or disable the Image Cropping:

- *0 - **Disable Image Cropping** - presents the full 752 x 480 pixels for the SE3300/SE4500, 1280 x 960 for the SE4750, 1280 x 800 for the SE4710, and 640 x 480 for the SE2100.
- 1 - **Enable Image Cropping** - crops the image to the pixel addresses set in *Crop to Pixel Addresses on page 4-9*.

NOTE The decoder has a cropping resolution of 4 pixels. Setting the cropping area to less than 3 pixels transfers the entire image.

Crop to Pixel Addresses

Parameter # 315 (Top)
Parameter # 316 (Left)

Parameter # 317 (Bottom)
Parameter # 318 (Right)

If you selected **Enable Image Cropping**, set the pixel addresses to crop to. Specify four values for Top, Left, Bottom, and Right, where Top and Bottom correspond to row pixel addresses, and Left and Right correspond to column pixel addresses.

Table 4-2 lists engines with the allowed value ranges and numbering.

Table 4-2 *Pixel Address Ranges by Engine*

Engine	Value Range	Column Numbering	Row Numbering
SE3300/SE4500	(0,0) to (751, 479)	0 to 751	0 to 479
SE4750	(0,0) to (1279, 959)	0 to 1279	0 to 959
SE4710	(0,0) to (1279, 799)	0 to 1279	0 to 799
SE2100	(0,0) to (639, 479)	0 to 639	0 to 479

For example, for a 4 row x 8 column image in the extreme bottom-right section of the image, set the following values:

SE3300/SE4500: Top = 476, Bottom = 479, Left = 744, Right = 751

SE4750: Top = 955, Bottom = 959, Left = 1271, Right = 1279

SE4710: Top = 795, Bottom = 799, Left = 1271, Right = 1279

SE2100: Top = 475, Bottom = 479, Left = 631, Right = 639

NOTE The decoder has a minimum cropping resolution of four pixels; increment and decrement cropping addresses in multiples of four. Other values are rounded up. For example, choosing to crop from the top at addresses 0, 1, or 2 (removing 1, 2, or 3 pixels) has the same result as cropping at address 3; this removes four rows from the top.

Image Resolution

Parameter # 302

This option alters image resolution before compression. Rows and columns are removed from the image, resulting in a smaller image containing the original content with reduced resolution.

Select one of the following values:

Table 4-3 *Image Resolution by Engine*

Value	Resolution	Uncropped Image Size			
		SE3300, SE4500	SE4750	SE4710	SE2100
*0	Full	752 x 480	1280 x 960	1280 x 800	640 x 480
1	1/2	376 x 240	640 x 480	640 x 400	320 x 240
3	1/4	188 x 120	320 x 240	320 x 200	160 x 120

Image File Format Selector

Parameter # 304

Select an image format appropriate for the system. The decoder stores captured images in the selected format:

- ***1** - JPEG File Format
- **3** - BMP File Format
- **4** - TIFF File Format

JPEG Image Options

Parameter # 299

JPEG images can be optimized for either size or for quality.

- *1 - Quality Value - the decoder then selects the corresponding image size.
- 0 - Size Value - the decoder then selects the best image quality.

JPEG Quality Value

JPEG Quality = Parameter # 305

Set the **JPEG Quality** to a value from 5 to 100, where 100 represents the highest quality image. The default is 65.

Image Enhancement

Parameter # 564

This feature uses a combination of edge sharpening and contrast enhancement to produce an image that is visually pleasing. Select a level of image enhancement:

- ***0 - Off**
- **1 - Low**
- **2 - Medium**
- **3 - High**

Bits per Pixel

Parameter # 303

Select the number of significant bits per pixel (BPP) to use when capturing an image:

- ***2 - 8 BPP** to assign 1 of 256 levels of grey to each pixel
- **0 - 1 BPP** for a black and white image
- **1 - 4 BPP** to assign 1 of 16 levels of grey to each pixel

The decoder ignores these settings for JPEG files, which always use 8 BPP.

Signature Capture

Parameter # 93

NOTE The SE2100 does not support Signature Capture.

A signature capture bar code is a special-purpose symbology which delineate a signature capture area in a document with a machine-readable format. The recognition pattern is variable so it can optionally provide an index to various signatures. The region inside the bar code pattern is considered the signature capture area. See *Appendix C, Signature Capture Code* for more information.

Enable or disable **Signature Capture**:

- ***0 - Disable Signature Capture**
- **1 - Enable Signature Capture**

Signature Capture File Format Selector

Parameter # 313

Decoding a signature capture bar code de-skews the signature image and converts the image to a BMP, JPEG, or TIFF file format. The output data includes the file descriptor followed by the formatted signature image.

Table 4-4 *Signature Capture Image Format*

File Descriptor			Signature Image
Output Format (1 byte)	**Signature Type (1 byte)**	**Signature Image Size (4 bytes) (BIG Endian)**	
JPEG - 1 BMP - 3 TIFF - 4	1-8	0x00000400	0x00010203…..

Select a signature file format appropriate for the system (BMP, TIFF, or JPEG). The decoder stores captured signatures in the selected format.

- ***1 - JPEG Signature Format**
- **3 - BMP Signature Format**
- **4 - TIFF Signature Format**

Signature Capture Bits per Pixel

Parameter # 314

Select the number of significant bits per pixel (BPP) to use when capturing a signature:

- ***2 - 8 BPP** to assign 1 of 256 levels of grey to each pixel
- **0 - 1 BPP** for a black and white image
- **1 - 4 BPP** to assign 1 of 16 levels of grey to each pixel

The decoder ignores these settings for JPEG files, which always use 8 BPP.

Signature Capture Width and Height

The aspect ratio of the Signature Capture Width and Signature Capture Height parameters must match that of the signature capture area. For example, a 4 x 1 inch signature capture area requires a 4 to 1 aspect ratio of width to height.

Signature Capture Width

Parameter # 366

Set the width of the signature capture box to a value within the appropriate range below:

- SE3300/SE4500: 001 to 752 decimal
- SE4710/SE4750: 001 to 1280 decimal

The default is 400.

Signature Capture Height

Parameter # 367

Set the height of the signature capture box to a value within the appropriate range below:

- SE3300/SE4500: 001 to 480 decimal
- SE4750: 001 to 960 decimal
- SE4710: 001 to 800 decimal

The default is 100.

Signature Capture JPEG Quality

Parameter # 421

Set the **Signature Capture JPEG Quality** to a value from 005 to 100, where 100 represents the highest quality image. The default is 65.

Video View Finder

Parameter # 324

Select a Video View Finder option:

- ***0** - **Disable Video View Finder** - turns the video view finder off.
- **1** - **Enable Video View Finder** - projects the video view finder while in Image Mode.

Video Scaling

Parameter # 761

Set the resolution of the image in video mode.

- **0 - Full Resolution**:
  - SE3300/SE4500: 752 x 480
  - SE4750: 1280 x 960
  - SE4710: 1280 x 800
  - SE2100: 640 to 480
- **1 - 1/2 Resolution**
- ***2 - 1/3 Resolution**
- **3 - 1/4 Resolution**

Retrieve Last Decoded Image

Parameter # 905

This parameter retrieves the last decoded frame in the most recent decode session. To receive the last decoded image call **barcodereader.getLastDecImage ()**. Enable or disable this parameter:

- ***0 - Disable Retrieve Last Decoded Image**
- **1 - Enable Retrieve Last Decoded Image**