



# **JPEG Postprocessing**

## **Reference Design**

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## 1 Purpose

This document describes the implementation of the JPEG Postprocessing feature, as well as an application example and a description of system limitations.

It can be used as a reference guide for implementing a working JPEG Postprocessing enabled system.

## 2 Definitions/ Terms

FW – Firmware.

HW – Hardware.

SW – Software.

TC – TransChip.

## 3 Applicable Documents

TC574x Programmer's reference

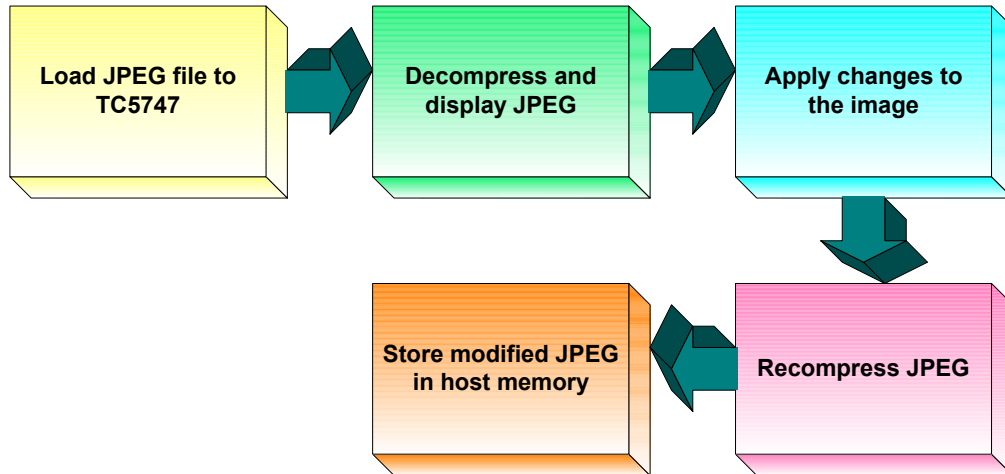
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#### 4 JPEG Postprocessing description and requirements

JPEG Postprocessing is a feature intended to allow the user to apply changes to JPEG images that are stored in the host memory. These changes may include modifications of image properties such as brightness, contrast, saturation and more.

Applying these changes is done by loading a JPEG image to the TC5747 memory, decompressing it, applying one or more changes to the image and recompressing the JPEG image, which is then read by the host for storage.

The following block diagram describes the basic stages of the JPEG Postprocessing process:



**Figure 1: Basic stages of JPEG Postprocessing**

The following list describes the requirements of the JPEG Postprocessing feature:

- The Postprocessing software package supports only JPEG still images captured by the TC5747
- The feature will support images with YUV422 format.
- Maximal JPEG image size is 128x120 pixels.
- The JPEG still image will be decompressed, processed with one of the supported algorithms and JPEG compressed.
- The supported algorithms are:
  - Brightness
  - Contrast
  - Saturation
  - Binary
  - Monochrome
  - Negative

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- Color balance
- Sharpness
- Blur

All of the abovementioned requirements are met in the current implementation.

Note that applying several cycles of JPEG compression and decompression may degrade image quality (for example, in applying multiple postprocessing sessions for a single image).

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## 5 JPEG Postprocessing API functions

JPEG Postprocessing is based on existing API commands for loading, storing, compressing, decompressing and displaying JPEG files.

A new command for modification of the various controllable image parameters has been added, as well as commands that notify the TC5747 about the beginning and ending of a JPEG Postprocessing session.

### 5.1 API functions

- **int TCjpegPpStartSession (void)**  
This command informs the TC5747 about a new JPEG Postprocessing session.
- **int TCjpegPpModifyParam (TCJpegPPParamID eParam, signed short sValue);**  
This command modifies each of the controllable parameters in the JPEG Postprocessing session. Each sending of the command modifies one parameter only.
  - **eParam** – The parameter which is requested to be modified.
  - **sValue** – The requested value for the selected parameter.

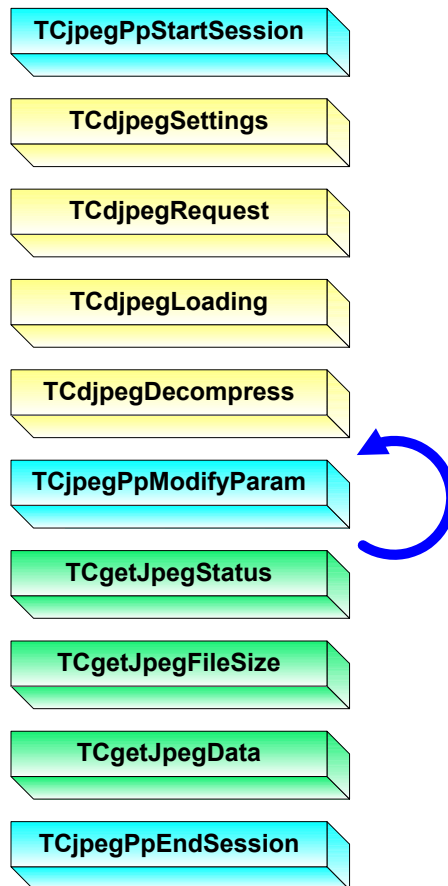
Parameter	Parameter description	Value range
TCIF_JPEGPP_BRIGHTNESS	Image brightness	-128 to +127
TCIF_JPEGPP_CONTRAST	Image contrast	-128 to +127
TCIF_JPEGPP_SATURATION	Image saturation	-128 to +127
TCIF_JPEGPP_BINARY	Binary effect	0 or 1
TCIF_JPEGPP_MONOCHROME	Monochrome effect	0 or 1
TCIF_JPEGPP_NEGATIVE	Negative effect	0 or 1
TCIF_JPEGPP_COLOR_BALANCE	Image color balance	-128 to +127
TCIF_JPEGPP_SHARPNESS	Image sharpness	0 or 1
TCIF_JPEGPP_BLUR	Image blur	0 or 1

- **int TCjpegPpEndSession (void)**  
This command informs the TC5747 that a JPEG Postprocessing session has been completed.

## 6 Application example

The following block diagram describes the API flow needed in order to perform a JPEG Postprocessing session.

- Yellow blocks represent existing JPEG decompression commands
- Green blocks represent existing JPEG compression commands
- Blue blocks represent new commands for JPEG Postprocessing



**Figure 2:** API commands sequence in JPEG Postprocessing session

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