

JPEG DECODER RELEASE NOTES

ANALOG DEVICES, INC.

www.analog.com

KT-362 (REV. 0.2, 2007-12-06)

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1 Introduction

This document is intended to provide customers with information specific to Version 3.x.x of the JPEG Decoder Library. Please ensure you replace both the library and header file in any existing application, when upgrading from an older version of the library.

1.1 Acronyms

ADI	Analog Devices Inc.
API	Application Program Interface
JPEG	Joint Photographic Experts Group
LDF	Linker Description File

1.2 References

- [1] *JPEG Decoder Developer's Guide*, Analog Devices Inc., DEVIMG-001-F, 2005.
- [2] *Silicon anomaly workaround guide for developers*, Analog Devices Inc., KT-68, 2007.

1.3 Overview

The customer should refer to the supplied developer's guides (reference [1]) for detailed information on how to use the library. This release note only documents any differences relative to this version of the Developer's Guide.

1.4 Additional Information

For more information on the latest ADI processors, silicon errata, code examples, development tools, system services and devices drivers, technical support and any other additional information, please visit our website at www.analog.com/processors.

2 Summary of Known Issues

The following table provides a summary of known issues affecting the JPEG Decoder library, and the affected versions of the library for each issue.

ID	Description	3.0.2	3.0.3	3.0.4	3.0.6	3.0.7	3.0.8
05-01-0007	Meta data not supported	x	x	x	x	x	x
05-01-0008	monochrome JPEG file generated by GIMP2 is not decoded properly	x	.	.	.	.	.
05-01-0011	Linker error li1080	x	.	.	.	.	.
05-01-0015	Infinite loop in Eval library	x	.	.	.	.	.
05-01-0021	JPEGs encoded with rotated YUV422 Image Data are not decoded properly	x	x	x	x	x	x
05-01-0027	Corrupted JPEG files causes hanging/crashing of DSP	x	x	x	.	.	.
05-01-0030	AVI1 file format JPEGs are not handled correctly	x	x	x	x	.	.
05-01-0032	Undocumented memory requirements for JPEG Decoder in linker input section "constdata"	.	.	x	x	x	x
05-01-0033	Linker error li1151 when application set to use 64 bit doubles	.	.	x	x	x	.
05-01-0034	Undocumented memory requirements for JPEG Decoder in linker input section "data1"	x	x	x	x	x	.
05-01-0035	DSP crashes for certain JPEG files	x	x	.	.	.	.

Key: x = Issue exists in this version
 . = Not applicable

The issues that affect versions 3.x.x are described in detail below.

2.1 Issue 05-01-0007

Meta data not supported:

The JPEG Decoder is not currently able to provide user access to any EXIF information stored within a JPEG file.

Versions affected: all versions 3.x.x

Workaround: No workaround is available. This is a new feature which will be made available in a future major release.

2.2 Issue 05-01-0008

monochrome JPEG file generated by GIMP2 is not decoded properly:

Some JPEG files created by The GIMP V2.0, an open source Encoder, fail to decode properly.

Versions affected: all versions earlier and including 3.0.2

Workaround: No workaround is available. This is fixed in version 3.0.3.

2.3 Issue 05-01-0011

Linker error li1080:

A linker error li1080 may occur when JPEGDEC_P0 and JPEGDEC_P1 are placed in disparate memory sections.

Versions affected: all versions earlier and including 3.0.2

Workaround: Ensure these 2 linker input sections are allocated by the LDF to the same 32 MB region of memory. This is fixed in version 3.0.3.

2.4 Issue 05-01-0015

Infinite loop in Eval library:

A possible infinite loop that may occur in the Evaluation library, effectively stalling the DSP.

Versions affected: all versions earlier and including 3.0.2

Workaround: No workaround is available. This is fixed in version 3.0.3.

2.5 Issue 05-01-0021

JPEGs encoded with rotated YUV422 Image Data are not decoded properly:

The JPEG Decoder is not currently able to handle JPEG images with rotated YUV422 image data where the chrominance data is sub-sampled by 2 in the vertical direction rather than in the horizontal direction.

Versions affected: all versions earlier and including 3.0.8

Workaround: No workaround is available. This will be fixed in a future release.

2.6 Issue 05-01-0027

Corrupted JPEG files causes hanging/crashing of DSP:

The JPEG Decoder may crash or hang if it processes a corrupted or truncated JPEG bitstream.

Versions affected: all versions earlier and including 3.0.5

Workaround: No workaround is available. This is fixed in version 3.0.6.

2.7 Issue 05-01-0030

AVI1 file format JPEGs are not handled correctly:

The AVI1 file format is used for JPEG frames that are part of a M-JPEG format originally defined by Microsoft as the JPEG DIB Format (May 26, 1993). For these files, the decoder has been observed to either return a grey image or crash.

Versions affected: all versions earlier and including 3.0.6

Workaround: No workaround is available. This is fixed in version 3.0.7.

2.8 Issue 05-01-0032

Undocumented memory requirements for JPEG Decoder in linker input section "constdata":

According to the JPEG Decoder Dev Guide [1], all static data is contained in the linker input section "JPEGDEC_D0". There is actually some static data in the linker input section "constdata" around 120 bytes.

Versions affected: 3.0.4, 3.0.5, 3.0.6, 3.0.7, 3.0.8

Workaround: Ensure the LDF contains an entry to map the linker input section "constdata" for the JPEG Decoder DLB to a linker output section. This will be fixed in a future release.

2.9 Issue 05-01-0033

Linker error li1151 when application set to use 64 bit doubles:

When the user selects the compiler option Double size = 64 bits, the linker fails and reports "Input sections have inconsistent qualifiers as follows".

Versions affected: 3.0.4, 3.0.5, 3.0.6, 3.0.7

Workaround: Select the compiler option "Allow mixing of sizes" for Double size in the application project, and recompile all application files. This is fixed in version 3.0.8.

2.10 Issue 05-01-0034

Undocumented memory requirements for JPEG Decoder in linker input section "data1":

According to the JPEG Decoder Dev Guide [1], all static data is contained in the linker input section "JPEGDEC_D0". There is actually some static data in the linker input section "data1" around 120 bytes.

Versions affected: all versions earlier and including 3.0.7

Workaround: (1) ensure the LDF contains an entry to map the linker input section "data1" for the JPEG Decoder DLB to a linker output section.

This is fixed in version 3.0.8.

2.11 Issue 05-01-0035

DSP crashes for certain JPEG files:

JPEG bitstreams which contain Huffman table (DHT segment) definitions before the Start of Frame (SOFx) marker, causes the DSP to crash.

Versions affected: all versions earlier and including 3.0.3

Workaround: No workaround is available. This is fixed in version 3.0.4

3 Version 3.0.x Release Notes

Added Features

As of version 3.0.7, support for the AVI1 file format has been added, used in some .avi M-JPEG videos.

Integration Issues

In order to avoid the DSP entering an infinite loop when the JPEG bitstream is corrupted, the user is required to modify the Bit stream data buffer module in such a way to ensure that the JPEG End Of Image marker "FFD9" is always input to the JPEG decoder at the end of a JPEG frame. The included C code in the file **bitbuffer-fix.c** shows how to do modify the example code provided in the SDK (where the whole compressed JPEG frame is assumed to be stored in DSP memory).

3.1 Version 3.0.8

Fixes

- o *Issue* 05-01-0033, 05-01-0034

Silicon Anomaly Workarounds

This version of the library implements a number of silicon processor anomaly workarounds to support a large number of Blackfin processor variants and silicon revisions, as detailed in [2]. A set of system workarounds are also recommended in [2] which the user will have to implement in order to avoid other silicon anomalies affecting correct operation of this software library.

Known bugs

- o *Issue* 05-01-0007, 05-01-0021, 05-01-0032

3.2 Version 3.0.7

Fixes

- o *Issue* 05-01-0030

Silicon Anomaly Workarounds

This version of the library provides limited support for silicon processor anomalies. The following anomalies have workarounds implemented within the library: 05000174, 05000202, 05000209.

Known bugs

- o *Issue* 05-01-0007, 05-01-0021, 05-01-0032, 05-01-0033, 05-01-0034

3.3 Version 3.0.6

Fixes

- o *Issue* 05-01-0027

Silicon Anomaly Workarounds

This version of the library provides limited support for silicon processor anomalies. The following anomalies have workarounds implemented within the library: 05000174, 05000202, 05000209.

Known bugs

- o *Issue* 05-01-0007, 05-01-0021, 05-01-0030, 05-01-0032, 05-01-0033, 05-01-0034

3.4 Version 3.0.4

Fixes

- o *Issue* 05-01-0035

Silicon Anomaly Workarounds

This version of the library provides limited support for silicon processor anomalies. The following anomalies have workarounds implemented within the library: 05000174, 05000202, 05000209.

Known bugs

- o *Issue* 05-01-0007, 05-01-0021, 05-01-0027, 05-01-0030, 05-01-0032, 05-01-0033, 05-01-0034

3.5 Version 3.0.3

Fixes

- o *Issue* 05-01-0008, 05-01-0011, 05-01-0015

Silicon Anomaly Workarounds

This version of the library does not implement any silicon processor anomaly workarounds.

Known bugs

- o *Issue* 05-01-0007, 05-01-0021, 05-01-0027, 05-01-0030, 05-01-0034, 05-01-0035

3.6 Version 3.0.2

Silicon Anomaly Workarounds

This version of the library does not implement any silicon processor anomaly workarounds.

Known bugs

- o *Issue* 05-01-0007, 05-01-0008, 05-01-0011, 05-01-0015, 05-01-0021, 05-01-0027, 05-01-0030, 05-01-0034, 05-01-0035

4 Frequently Asked Questions

4.1 Input Sections have no destination

Error Message

```
[Warning li2060] The following input section(s) that contain program code
and/or data have not been placed into the executable for processor 'P0'
as there are no relevant commands specified in the LDF:
```

```
..\..\lib\libaace_bf533_03.dlb[abcd.doj](adi_aace_fastb1_prio8_r)
..\..\lib\libaace_bf533_03.dlb[efgh.doj](adi_aace_fastb1_prio8_r)
```

...etc

Probable Cause

This message indicates that the ldf file does not contain instructions to accommodate the specified section. When encountered in the example application it generally indicates that the library version in use is different to the ldf file for the project and can be fixed by upgrading the ldf file to that distributed with the library.