



# Mali Offline Shader Compiler Errata

Document Number: PR389-PRDC-011263 2.0  
Date of Issue: 17<sup>th</sup> January 2012  
Product: Mali Offline Shader Compiler  
Product Version: 3.0.0

© Copyright ARM Limited 2012. All rights reserved.

## Abstract

This document describes the known errata in the EAC release of the Mali Offline Shader Compiler version 3.0.0.

This is a working document throughout the product lifecycle and, as such, the content may be modified as new information is uncovered.

The information contained herein is the property of ARM Ltd. and is supplied without liability for errors or omissions. No part may be reproduced or used except as authorized by contract or other written permission. The copyright and the foregoing restriction on reproduction and use extend to all media in which this information may be embodied.

## Release Information

### Proprietary Notice

Words and logos marked with ® or ™ are registered trademarks or trademarks of ARM Limited in the EU and other countries, except as otherwise stated below in this proprietary notice. Other brands and names mentioned herein may be the trademarks of their respective owners.

Neither the whole nor any part of the information contained in, or the product described in, this document may be adapted or reproduced in any material form except with the prior written permission of the copyright holder.

The product described in this document is subject to continuous developments and improvements. All particulars of the product and its use contained in this document are given by ARM Limited in good faith. However, all warranties implied or expressed, including but not limited to implied warranties of merchantability, or fitness for purpose, are excluded.

This document is intended only to assist the reader in the use of the product. ARM Limited shall not be liable for any loss or damage arising from the use of any information in this document, or any error or omission in such information, or any incorrect use of the product.

### Document Confidentiality Status

This document is Non-Confidential. The right to use, copy and disclose this document may be subject to license restrictions in accordance with the terms of the agreement entered into by ARM and the party that ARM delivered this document to.

### ARM Web Address

The ARM website is located at the following address: <http://www.arm.com>

### Feedback

ARM welcomes feedback on this product and its documentation.

#### ***Feedback on this product***

If you have any comments or suggestions about this product, contact your supplier and give the following:

- The product name.
- The product revision or version.
- An explanation with as much information as you can provide. Include symptoms if appropriate.

#### ***Feedback on this document***

If you have any comments on or about this document, please send email to [errata@arm.com](mailto:errata@arm.com) giving the following:

- The document title.
- The document number.
- The page number(s) to which your comments refer.
- A concise explanation of your comments.

General suggestion for additions and improvements are also welcome.

# CONTENTS

<b>1</b>	<b>Preface</b>	<b>4</b>
1.1	Change Control	4
1.2	Scope	4
<b>2</b>	<b>Categorisation of errata</b>	<b>5</b>
2.1	Errata Summary	5
<b>3</b>	<b>CATEGORY 1 Errata</b>	<b>6</b>
<b>4</b>	<b>CATEGORY 2 ERRATA</b>	<b>7</b>
<b>5</b>	<b>CATEGORY 3 ERRATA</b>	<b>8</b>
5.1	717175: Shader compilation may fail when the client application sets the locate to non-US	8
5.2	717177: Compilation of a vertex shader may fail with the error "Register allocation failed for vertex shader"	9

# 1 PREFACE

## 1.1 Change Control

<i>Issue</i>	<i>Date</i>	<i>Change</i>
1.0	15 <sup>th</sup> September 2009	Initial release.
2.0	17 <sup>th</sup> January 2012	Changes for product version 3.0.0.

## 1.2 Scope

This document describes the errata discovered in the implementation of the Mali Offline Shader Compiler, categorized by level of severity. Each description includes:

- the conditions under which erroneous behavior occurs
- the implications of the erratum with respect to typical applications
- the application and limitations of a 'work-around' where possible

## 2 CATEGORISATION OF ERRATA

Errata recorded in this document are split into three groups:

- Category 1** Features which are impossible to work around and severely restricts the use of the software in all or the majority of applications rendering the software unusable.
- Category 2** Features which contravene the specified behavior and may limit or severely impair the intended use of specified features but does not render the software unusable in all or the majority of applications.
- Category 3** Features that were not the originally intended behavior but should not cause any problems in applications.

### 2.1 Errata Summary

The following tables summarize all errata associated with this product.

#### *Mali Offline Shader Compiler Errata Summary*

<i>ID</i>	<i>Category</i>	<i>Summary of Erratum</i>
717175	Category 3	Shader compilation may fail when the client application sets the locale to non-US
717177	Category 3	Compilation of a vertex shader may fail with the error "Register allocation failed for vertex shader"

### **3 CATEGORY 1 ERRATA**

**No Category 1 errata**

## 4 CATEGORY 2 ERRATA

No Category 2 errata

## 5 CATEGORY 3 ERRATA

### 5.1 717175: Shader compilation may fail when the client application sets the locale to non-US

#### Status

Affects: Mali Offline Shader Compiler  
Fault status: Category 3, Present in: 2.2, 3.0.0  
Platforms Affected: Windows, Linux, Mac OS X

#### Description

The ESSL compiler uses `strtod()` for parsing floating point literals. Therefore, if the online compiler is used with an OpenGL ES application and the application either sets the locale explicitly to a locale with different numerical conventions than the US with e.g.

```
setlocale(LC_NUMERIC, "nb_NO");
```

or picks up the current locale from environment variables with e.g.

```
setlocale(LC_NUMERIC, "");
```

and the environment variables are set in a way that indicates a locale with a different numerical convention than the US, the parser will fail with errors such as

```
0:28: L0001: Error while parsing floating point literal '0.0'
```

This is because the `strtod()` function now is looking for literals with a different decimal separator.

#### Implications

Online compilation of valid shaders using floating –point literals may fail.

#### Workaround

Either use the off-line compiler and load shader binaries, or surround each call to `glCompileShader` with `setlocale` calls, e.g.

```
/* reset numeric locale to default and save the old locale */  
char *prev_locale = setlocale(LC_NUMERIC, "C");  
glCompileShader(...);  
setlocale(LC_NUMERIC, prev_locale); /* restore the old locale */.
```

## 5.2 717177: Compilation of a vertex shader may fail with the error "Register allocation failed for vertex shader"

### Status

Affects: Mali Offline Shader Compiler  
Fault status: Category 3, Present in: 2.2, 3.0.0  
Platforms Affected: Windows, Linux, Mac OS X

### Description

MaliGP2 has only limited internal bandwidth between its registers and execution units. In some rare cases, the register allocator for MaliGP2 in the shader compiler runs into a situation where there are more operations executed in one cycle than can be fed from the registers simultaneously. The compiler aborts the compilation in this case.

### Implications

Some very big or very complex vertex shaders fail to compile.

### Workaround

Changing the shader code slightly will often eliminate the problem. Try to rewrite some of the shader to do the calculations differently.