



OpenGL ES 2.0 Emulator (GX819) **Errata Notice**

This document contains all errata known at the date of issue in supported releases up to and including version 1.2.0 of the OpenGL ES 2.0 Emulator.

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General suggestion for additions and improvements are also welcome.

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1 INTRODUCTION

Scope

This document describes errata categorized by level of severity. Each description includes:

- a unique defect tracking identifier
- the current status of the defect
- where the implementation deviates from the specification and 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

Categorization of Errata

Errata recorded in this document are split into three levels of severity:

Category 1 Behavior that is impossible to work around and that severely restricts the use of the product in all, or the majority of applications, rendering the device unusable.

Category 2 Behavior that contravenes the specified behavior and that might limit or severely impair the intended use of specified features, but does not render the product unusable in all or the majority of applications.

Category 3 Behavior that was not the originally intended behavior but should not cause any problems in applications.

2 ERRATA SUMMARY TABLE

The errata associated with this product affect product versions as below.

A cell shown thus **X** indicates that the defect affects the revision shown at the top of that column.

ID	Cat	Summary of erratum	1.2.0
4932	3	EGL_MATCH_NATIVE_PIXMAP attribute not supported	X
4935	3	eglQuerySurface returns the original size of a resized native window	X
5966	3	WGL_PBUFFER_LOST_ARB pbuffer memory lost not checked	X
5968	3	Use of back buffer is always enabled and cannot be disabled	X
5979	3	Line numbers reported by the shader compiler do not match original source	X
8516	3	List of EGL configurations returned by eglChooseConfig is not sorted	X
8517	3	Incorrect error code returned instead of EGL_BAD_MATCH	X
8518	3	eglMakeCurrent succeeds with incompatible surface and context	X
9928	3	Online connection to frame buffer is not supported	X
9581	3	glTexImage2D gives incorrect errors for non power of two textures	X
10093	3	eglTerminate cleans up resources associated with display	X
10099	3	eglCreatePbufferSurface fails when attrib_list is NULL or EGL_NONE	X
10102	3	eglCreatePbufferSurface doesn't accept some texture attributes	X
10107	3	EGL_LARGEST_PBUFFER not triggered when less graphics memory is available	X
10103	3	Some EGL Attributes are not supported for eglChooseConfig and eglGetConfigAttrib	X
10106	3	Some EGL Surface Attributes are not supported for eglQuerySurface	X

3 ERRATA – CATEGORY 1

There are no Errata in this Category

4 ERRATA – CATEGORY 2

There are no Errata in this Category

5 ERRATA – CATEGORY 3

4932: EGL_MATCH_NATIVE_PIXMAP attribute not supported

Status

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows

Description

The attribute `EGL_MATCH_NATIVE_PIXMAP` is not supported by `eglChooseConfig`.

Implications

The EGL 1.3 specification says that the attribute `EGL_MATCH_NATIVE_PIXMAP` was introduced to make it easier to choose an `EGLConfig` to match a native pixmap. This attribute is accepted by the emulator, but is ignored other than to validate the provided handle.

Workaround

Applications should work as expected even if the chosen `EGLConfig` does not match the pixmap format because rendering is done to an internal buffer and then copied to the pixmap, including any necessary pixel format conversions. If an 8-bit per channel `EGLConfig` is desired (to ensure the same color precision as the native pixmap), then `EGL_RED_SIZE`, `EGL_GREEN_SIZE` and `EGL_BLUE_SIZE` should be explicitly passed to `eglChooseConfig`.

4935: eglQuerySurface returns the original size of a resized native window**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0

Description

The values of EGL_WIDTH and EGL_HEIGHT, as returned by eglQuerySurface, are determined at the time eglCreateWindowSurface is called, and are not updated if the window is later resized.

Implications

Applications that wish to respond to window resize events cannot use EGL to determine the new window size.

Workaround

If window resizes are not expected or if a non-resizable window is used, no action is required. Applications that wish to respond to changes in window size must use the native windowing API to determine the new size of the window.

5966: WGL_PBUFFER_LOST_ARB pbuffer memory lost not checked**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows

Description

Pbuffers and pixmaps are supported via the use of the `WGL_ARB_pbuffer` extension (see http://www.opengl.org/registry/specs/ARB/wgl_pbuffer.txt). This specifies that a `WGL_PBUFFER_LOST_ARB` query can be made to check for loss of memory due to a display mode change. The OpenGL ES 2.0 Emulator does not query `WGL_PBUFFER_LOST_ARB`.

Implications

The OpenGL ES 2.0 Emulator will not detect pbuffer memory lost due to a display mode change.

Workaround

Do not change display modes while running the OpenGL ES 2.0 Emulator.

5968: Use of back buffer is always enabled and cannot be disabled**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0

Description

`eglChooseConfig` translates the EGL attribute list into an attribute list suitable for the underlying OpenGL graphics driver. In addition to this, it adds another attribute to the list. This additional attribute asks the underlying OpenGL graphics driver to return only those configurations that allow use of the back buffer. Hence use of back buffer is always enabled and applications cannot disable it.

Implications

Use of the back buffer is always enabled and cannot be disabled.

Workaround

None.

5979: Line numbers reported by the shader compiler do not match original source**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0

Description

Due to translation of shader language from ESSL to GLSL for use by the underlying OpenGL graphics driver and the concatenation of strings input to `glShaderSource`, error line numbers may not match the original source code.

Implications

Shader compiler errors reported by the emulator cannot be directly mapped back to original shader source code line numbers.

Workaround

Ensure that the Mali GPU Offline Shader Compiler is installed and configured correctly. Shader source code is sent unmodified to the Offline Shader Compiler and hence line numbering should be correct. Be aware that separate strings passed into `glShaderSource` are concatenated before being passed to the Offline Shader Compiler.

8516: List of EGL configurations returned by `eglChooseConfig` is not sorted**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Linux

Description

The list of configurations returned by `eglChooseConfig` is not sorted.

Implications

Applications must not rely upon sorting of configurations by `eglChooseConfig`.

Workaround

None.

8517: Incorrect error code returned instead of EGL_BAD_MATCH**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Linux

Description

Sometimes, instead of `EGL_BAD_MATCH`, EGL returns an incorrect error code. This happens because the Linux version of EGL is implemented on top of GLX, which does not have an error code corresponding to `EGL_BAD_MATCH` and EGL is not always able to detect the real cause of the error.

Implications

Applications will sometimes see an incorrect error code instead of `EGL_BAD_MATCH`.

Workaround

None.

8518: eglMakeCurrent succeeds with incompatible surface and context**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Linux

Description

It has been observed on some platforms that `eglMakeCurrent` will succeed even if the draw or read surface is not compatible with the current context. This is due to the GLX layer failing to detect the incompatibility on these platforms.

Implications

On some platforms, applications cannot rely upon `eglMakeCurrent` to detect incompatibility between surface and context.

Workaround

None.

9928: Online connection to frame buffer is not supported**Status**

Affects: OpenGL ES 2.0 Emulator, Mali GPU Performance Analysis Tool

Fault Status: Cat 3, Present in version 1.2.0

Description

When connecting to the OpenGL ES 2.0 Emulator using the Mali GPU Performance Analysis Tool, the current frame buffer appears in the counter list as a valid data source for PAT. However, it is not currently supported and reading it will cause undefined behavior.

Implications

Reading the frame buffer through the Mali GPU Performance Analysis Tool is unsupported.

Workaround

Do not use the frame buffer data source in the Mali GPU Performance Analysis Tool whilst connecting to the OpenGL ES 2.0 Emulator in online mode.

9581: `glTexImage2D` gives errors on non power of two textures**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0

Description

The function `glTexImage2D` gives `GL_INVALID_VALUE` error if the parameter "level" is not 0 and the dimensions are not powers of 2. Although OpenGL ES 2.0 will only handle correctly mipmapped textures with power of 2 sizes, it should accept any size and return an appropriate error.

Implications

`GL_INVALID_VALUE` is returned when non power of two textures is used.

Workaround

There is no workaround available when non power of two mipmapped textures is used.

10093: eglTerminate cleans up resources associated with display**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows

Description

When `eglTerminate` is called with a valid display, all resources associated with the display are removed. As a result, the following scenarios produce an error.

- 1) Calling `eglTerminate` again results in `EGL_BAD_DISPLAY` being set instead of `EGL_TRUE`
- 2) Calling `eglInitialize` after `eglTerminate` results in `EGL_BAD_DISPLAY` being set instead of `EGL_SUCCESS`
- 3) Calling `eglQueryString` after `eglTerminate` results in `EGL_BAD_DISPLAY` being set instead of `EGL_NOT_INITIALIZED`

Implications

The implications for the scenarios mentioned above are,

- 1) `eglGetError` will return the wrong error when `eglTerminate` is called repeatedly
- 2) `eglInitialize` will not succeed after `eglTerminate`
- 3) `eglGetError` will return the wrong error after `eglQueryString`

Workaround

The resources for the display are created again when `eglGetDisplay` is called after `eglTerminate` and all the above scenarios will produce the expected output.

10099: `eglCreatePbufferSurface` fails when `attrib_list` is `NULL` or `EGL_NONE`**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows

Description

When `eglCreatePbufferSurface` is called with attribute list that is `NULL` or `EGL_NONE`, no surface is returned. In this scenario, all attributes assume their default values. This includes width and height for the surface which are set to 0. The underlying `WGL` implementation doesn't return a valid surface when width and height of the surface are 0.

Implications

Creation of Pbuffer surfaces with default attributes will not work.

Workaround

The width, height and other attributes of the desired Pbuffer surface should be mentioned for `eglCreatePbufferSurface` to work.

10102: eglCreatePbufferSurface doesn't accept some texture attributes**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows and Linux

Description

When `eglCreatePbufferSurface` is called with the following attributes, no surface is returned.

Windows:

- `EGL_TEXTURE_TARGET`
- `EGL_TEXTURE_FORMAT`
- `EGL_MIPMAP_TEXTURE`

Linux:

- `EGL_TEXTURE_FORMAT`
- `EGL_TEXTURE_TARGET`
- `EGL_MIPMAP_TEXTURE`
- `EGL_VG_COLORSPACE`
- `EGL_VG_ALPHA_FORMAT`

The underlying `WGL/GLX` implementations don't have corresponding attributes and as a result no surface is returned.

Implications

Creation of Pbuffer surfaces which contain the above attributes will not work.

Workaround

There is no workaround available as the EGL implementation relies on the underlying `WGL/GLX` implementations for Pbuffer support.

10107: EGL_LARGEST_PBUFFER not triggered when less graphics memory is available**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Windows

Description

When `eglCreatePbufferSurface` is called with `EGL_LARGEST_PBUFFER` attribute set to `EGL_TRUE`, no surface is returned when the graphics memory available is less. The function is supposed to return a Pbuffer surface with width and height that would fit in the memory available.

Implications

Creation of Pbuffer surfaces that rely on `EGL_LARGEST_PBUFFER` will not work.

Workaround

The work around is to call `eglCreatePbufferSurface` repeatedly (with decreased height and width) until it succeeds.

10103: Some EGL Attributes are not supported for `eglChooseConfig` and `eglGetConfigAttrib`

Status

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Linux

Description

When any of the following attributes are given as input to `eglChooseConfig` or `eglGetConfigAttrib`, `EGL_BAD_ATTRIBUTE` is set. This error is returned because the underlying GLX implementation doesn't have counterpart GLX attributes that can be used.

- `EGL_LUMINANCE_SIZE`
- `EGL_ALPHA_MASK_SIZE`
- `EGL_BIND_TO_TEXTURE_RGB`
- `EGL_BIND_TO_TEXTURE_RGBA`
- `EGL_COLOR_BUFFER_TYPE`
- `EGL_MAX_SWAP_INTERVAL`
- `EGL_MIN_SWAP_INTERVAL`

Implications

The above EGL calls will set the error `EGL_BAD_ATTRIBUTE` instead of returning with `EGL_SUCCESS`.

Workaround

There is no workaround available for this issue as the EGL implementation relies on the underlying GLX implementation.

10106: Some EGL Surface Attributes are not supported for eglQuerySurface**Status**

Affects: OpenGL ES 2.0 Emulator

Fault Status: Cat 3, Present in version 1.2.0 for Linux

Description

When any of the following attributes are given as input to `eglQuerySurface`, `EGL_BAD_ATTRIBUTE` is set. This error is returned because the underlying GLX implementation doesn't have counterpart GLX attributes that can be used.

- `EGL_LUMINANCE_SIZE`
- `EGL_ALPHA_MASK_SIZE`
- `EGL_BIND_TO_TEXTURE_RGB`
- `EGL_BIND_TO_TEXTURE_RGBA`
- `EGL_COLOR_BUFFER_TYPE`
- `EGL_MAX_SWAP_INTERVAL`
- `EGL_MIN_SWAP_INTERVAL`

Implications

The above EGL calls will set the error `EGL_BAD_ATTRIBUTE` instead of returning with `EGL_SUCCESS`.

Workaround

There is no workaround available for this issue as the EGL implementation relies on the underlying GLX implementation.