Distorted Android - Bug #31

various issues with OIT branch on Mali GPU

05/30/2018 12:53 PM - Leszek Koltunski

Status:	Closed	**Start date:**	05/30/2018
Priority:	Urgent	**Due date:**	
Assignee:	Leszek Koltunski	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

The 'order-independent-transparency' branch appears to run correctly on Qualcomm's Adreno GPUs, but crashes in mysterious ways when run on a phone equipped with ARM's Mali GPU:

E/OpenGLRenderer: Error:glFinish::execution failed
E/OpenGLRenderer: GL error: Out of memory!

Related issues:

Blocks Feature #15: Order Independent Transparency	**Closed**	**06/17/2016**

History

#1 - 05/30/2018 12:55 PM - Leszek Koltunski

- % Done changed from 0 to 20

Debugging with a Mali Graphics Debugger 4.9.2.

It doesn't seem possible that the issue is really lack of memory. As explained in stackoverflow though (https://stackoverflow.com/questions/50492866/openglrenderer-gl-error-out-of-memory) , certain OpenGL drivers can return GL_OUT_OF_MEMORY as a sort of blanket error case though.

Currently it seems like the issue has something to do with the way SSBO index is computed in OIT fragment shaders.

#2 - 05/30/2018 12:58 PM - Leszek Koltunski

- Blocks Feature #15: Order Independent Transparency added

#3 - 05/30/2018 01:03 PM - Leszek Koltunski

- Status changed from New to In Progress

#4 - 05/30/2018 03:00 PM - Leszek Koltunski

- % Done changed from 20 to 60

The crash fixed with commit library|344ac0e4.

Still, on Mali GPUs things keep suspiciously flashing, (best visible in 'Triblur') so issue still kept open.

#5 - 05/31/2018 12:48 PM - Leszek Koltunski

- % Done changed from 60 to 70

Commit 2aef1f4d solves next issue which was visible only on Mali.

Still other issues exists - for example the 'Triblur' keeps flashing.

#6 - 05/31/2018 12:49 PM - Leszek Koltunski

- Subject changed from OIT branch crashes on Mali GPU to various issues with OIT branch on Mali GPU

#7 - 06/07/2018 11:18 AM - Leszek Koltunski

Questions asked:

https://www.opengl.org/discussion_boards/showthread.php/200754-Flashes-on-ARM-Mali?p=1291723
https://community.arm.com/graphics/f/discussions/10285/opengl-es-3-1-on-mali-t880-flashes?tempkey=51433e22-cd8d-4ef1-85fb-59d84f1c4ef9

DarkPhoton says this might be a 'full pipeline flush'.

#8 - 06/22/2018 10:41 PM - Leszek Koltunski

- % Done changed from 70 to 90

Commit 9d845904 fixes this on master. Still we need to port the fix to the 'order-independent-transparency' branch.

Full history in OpenGL.org forums: https://www.opengl.org/discussion_boards/showthread.php/200754-Flashes-on-ARM-Mali

#9 - 06/27/2018 11:15 AM - Distorted Admin

The commit mentioned in the previous comment did not fix the flashes on Mali T880 completely, but now I am pretty sure that commit 2301cb2f finally does.

Additionally, it is confirmed by ARM engineer (https://community.arm.com/graphics/f/discussions/10285/opengl-es-3-1-on-mali-t880-flashes) that this is an issue in their r12 driver. The issue is fixed in r22 (present in Samsung Android 8.0.0-based OS update for Samsung Galaxy S7).

#10 - 07/03/2018 12:50 PM - Leszek Koltunski

- Status changed from In Progress to Resolved

- % Done changed from 90 to 100

Finally resolve the issue. (commit 6544040f makes non-postprocessed OIT work).

Still some stuff remains (confirm that the Mali driver bug is indeed gone on r22; issues with PowerVR compiler which fails to compile the OIT pass2 and pass4 shaders) but those will be tracked separately.

#11 - 07/03/2018 12:50 PM - Leszek Koltunski

- Status changed from Resolved to Closed