Android Display SW DDK Test Reports

MPG

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Abstract

This document contains the integration test results relating to the r1p0-05rel0 release of the Mali-DP5xx Android SW DDK deliverables as supplied in the ARM deliverables bundle DP9060000-BU-00000-r1p0-05rel0.

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

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1 PREFACE

This document contains the integration test results relating to the r1p0 release of the Mali-DP5xx Android SW DDK deliverables as supplied in the ARM deliverables bundle DP9060000-BU-00000-r1p0-05rel0.

1.1 Test Environment

1.1.1 Software

1.1.1.1 DDK

The Mali-DP5xx Android SW DDK is built against:

GIT branch: `releases/r1p0`

Revision: `91c99292e259f1c4bc2f2e2acfbfa799cba734ab`

1.1.1.2 Android

Version:

- **v4.4.2_r1**
- **v5.0.0_r2**
- **Kernel 3.10**

1.1.1.3 Testing Feature List

Kernel:

- **ion**
- **iommu**
- **performance**
- **crop**
- **rotation**
- **scaling**
- **sync fence**
- **multi-layer**
- **driver resource sanity**
- **power management**

Core:

- **multi-layers**
- **multi-layer with YV12 format**
- **splitblock afbc**

Video TX:

- **mode set**
- **hotplug**
- **gamma value**
- **connect type**

1.1.2 Hardware

1.1.2.1 Versatile Express for Android v4.4

The verification platform used for Android v4.4 is a Versatile Express board with FPGA virtex7 and TC2.
One implementation used in FPGA Virtex7:

- **Mali-T760 r0p0-00rel0**
- **2 x Mali-DP550 r0p0-00rel0**
- **2 x MMU-400**

CPU used in TC2:

- **2 x ARM Cortex™-A15**
- **3x ARM Cortex™-A7**

1.1.2.2 Juno for Android v5.0

The verification platform used for Android v5.0 (64bit) is a Juno board with FPGA virtex7.
One implementation used in FPGA Virtex7:

- **1 x Mali-DP550 r0p0-00rel0**
- **Mali-T860 r0p2-00rel0**

Juno:

- **2 x A57 + 4 x A53**

1.1.3 Test Environment Setup

Build the driver and test binaries as described in the Android Display SW DDK Release Note (DP9060000-DC-06002) and Android Display SW DDK Integration Guide (DP9060000-DC-10002). Both of them can be found in the release package.

2 TEST RESULTS SUMMARY

2.1 Build Configurations

Tools:

- GNU Compiler Collection (GCC), host-side (x86): v4.7 (Android v4.4)
- GNU Compiler Collection (GCC), host-side (x86): v4.9 (Android v5.0)
- GNU Make: v3.81
- GNU tar: v1.26

2.2 Statistics

For detailed test results and test descriptions see “Appendix A1 Test results”.

Number of configurations: 2

Number of test cases: 68

Pass rate (excludes n/a): 94%

2.3 Known issues

There are 2 tests failing due to the limitations of our reference platforms:

- test_multi_layer_worst_case: fails because there is not enough memory available to allocate three full screen layers from the ION DMA heap.
- test_ion_buffer_simple_post: fails because there is an upstream bug in the ADF framework means that any buffers posted using the simple-post method are not correctly reference counted, and as a result don’t get properly freed.

All of these 2 tests should pass in a platform where the problems described above do not exist.

3 APPENDIX A1 TEST RESULTS

Test Name	Description	Result	
Configurations		*Android v4.4*	*Android v5.0*
MALIDP INTEGRATION TESTS			
KERNEL INTEGRATION SUITE			
test_ion_buffer_simple_post	Sets the preferred mode on the primary interface, allocates an ion buffer and attempts to post it to the screen.	FAIL	FAIL
test_iommu_page_fault	Check that the driver handles properly possible page faults.	PASS	PASS
test_rotation_non_compressed	Check the rotation support is correct for non compressed pixel formats.	PASS	PASS
test_rotation_afbc_compressed	Check the rotation support is correct for AFBC compressed pixel formats.	PASS	PASS
test_source_crop_yuv_incremental	Test cropping uncompressed YUV layers.	PASS	PASS
test_source_crop_rgb_afbc	Test cropping compressed RGB layers.	PASS	PASS
test_performance_complex_scene	Check that the kernel driver doesn't affect the frame rate.	PASS	PASS
test_scaling_composition_sweep_one_plane	Check a collection of scaling factors for one plane pixel formats.	PASS	PASS
test_scaling_composition_sweep_two_plane	Check a collection of scaling factors for two plane pixel formats.	PASS	PASS
test_scaling_composition_sweep_three_plane	Check a collection of scaling factors for three plane pixel formats.	PASS	PASS
test_scaling_composition_three_layers	Check that we can properly scale a composition consisting of three layers.	PASS	PASS
test_acquire_fence	Check the acquire fence is waited on correctly.	PASS	PASS
test_complete_fence	Checks a config complete fence is released properly.	PASS	PASS
test_memory_write_complete_fence	Tests the memory write-out complete fence works properly.	PASS	PASS
test_memory_writeout_composition	Test writing the composition result to memory.	PASS	PASS
test_multi_layer_worst_case	Test the worst-case 3-layer scenario.	FAIL	FAIL
test_driver_resource_sanity	Test that the IRQ numbers and memory base are present and check their sanity.	PASS	PASS
test_pm_runtime_enabled	Check that runtime-pm is enabled in the driver	PASS	PASS
test_pm_runtime_usage	Check that the runtime_pm_usage field in sysfs is as expected	PASS	PASS
test_pm_runtime_active	Check that the device status is "active" as expected	PASS	PASS
{test_pm_runtime_suspended	Check that the device status is "suspended" as expected	PASS	PASS

{test_pm_runtime_suspend_resume	Check that the device can be runtime suspended/resumed	PASS	PASS
{test_pm_system_suspend_display_on	Tests the driver correctly handles system suspend when the display is ON	PASS	PASS
{test_pm_system_suspend_display_off	Tests the driver correctly handles system suspend when the display is OFF	PASS	PASS
CORE INTEGRATION SUITE			
multi_pass_through	Test the multi layer post functionality of the malidp hwcomposer.	PASS	PASS
yv12_multi_pass	Test the multi layer post functionality of the malidp hwcomposer.	PASS	PASS
afbc_test_splitblock	Test the splitblock afbc feature	PASS	PASS
VIDEO TX INTEGRATION SUITE			
test_video_tx_modes_valid	Test video video transmitter valid modes.	PASS	PASS
test_video_tx_modes_invalid	Test that modes not supported by the video transmitter are rejected by the driver.	PASS	PASS
test_video_tx_modes_disconnected	Test mode set behaviour when the monitor is disconnected.	PASS	PASS
test_video_tx_hotplug_irq	Test that the hotplug IRQs are notified properly.	PASS	PASS
test_video_tx_hotplug_polling	Test that hotplug events are notified properly when polling is enabled.	PASS	PASS
test_video_tx_gamma	Test that the gamma value is reported as expected.	PASS	PASS
test_video_tx_connector_type	Test that the connector type is reported as expected.	PASS	PASS