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# 高通用户体验性能优化期刊

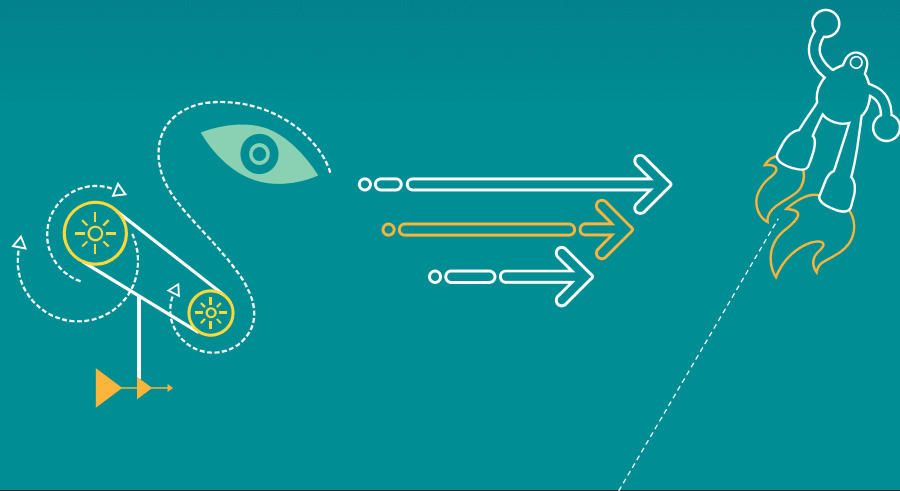
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# Revision History

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Revision	Date	Description
A	Apr. 2016	Initial release

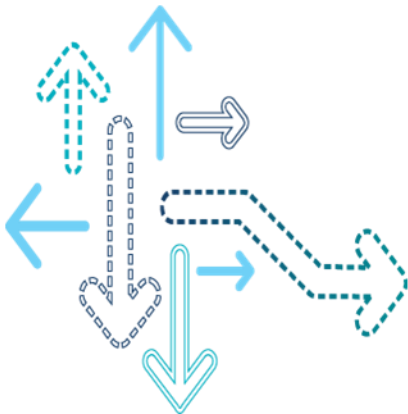
**Note:** There is no Rev. I, O, Q, S, X, or Z per Mil. standards.

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- **LCD蓝屏(under-run)**
- Adaptive LMK(ALMK)功能在8994/92平台使能

## LCD蓝屏(under-run)问题分析



# LCD蓝屏(under-run)问题分析

在开发过程中，遇见的LCD闪蓝屏问题，一般属于MDSS under-run。具体视觉效果差异较大，可以全屏闪，也可以局部闪动。有时难以确定复现路径，属于概率性问题。其颜色可以通过panel dtsti文件(@file \kernel\arch\arm\boot\dtst\qcom\dsi-panel-nt35590-720p-video.dtsi). <qcom,mdss-dsi-underflow-color>设置，以方便调试和最后阶段预防性的规避问题（可以设置成黑色）。

Under-run一般是因为display data flow 不能及时为MDSS 传送显示数据，MDSS HW自动填充数据以满足外部LCD panel的时序要求。

## ▪ 问题确认

有两种方法可以辨别under-run发生与否。

1.使用debugfs，如果under-run计数增加，那么就发生了under-run.

```
adb shell
```

```
# cd d/mdp //d 是 debugfs 路径
```

```
# cat stat
```

```
mdp:
```

```
intf2: play: 00010335  vsync: 00016858      underrun: 00000027
```

2. 在kernel文件中增加log信息，方便与特定frame信息一起打印

mdss\_mdp\_video\_underrun\_intr\_done(void \*arg)" (@ file \kernel\drivers\video\msm\mdss\mdss\_mdp\_intf\_video.c).

更改 pr\_debug 为 pr\_err

```
- pr_debug("display underrun detected for ctl=%d count=%d\n", ctl->num, ctl->underrun_cnt);
```

```
+ pr_err("display underrun detected for ctl=%d count=%d\n", ctl->num, ctl->underrun_cnt);
```

# LCD蓝屏(under-run)问题分析

- 问题debug

- 1.增加MDP的clock来确定是否与MDP clock计算错误有关

```
static void mdss_mdp_ctl_perf_update(struct mdss_mdp_ctl *ctl, int params_changed)" (@ file  
\kernel\drivers\video\msm\mdss\mdss_mdp_intf_ctl.c)
```

```
-- mdss_mdp_set_clk_rate(clk_rate);
```

```
++ mdss_mdp_set_clk_rate(320000000); // 320 MHZ 是 8916的最大值，每个芯片有所不同。
```

2. 增加DDR clock 和AXI bus clock的投票值

```
"int mdss_mdp_bus_scale_set_quota(u64 ab_quota, u64 ib_quota)" (@ file  
\kernel\drivers\video\msm\mdss\mdss_mdp_intf_ctl.c)
```

```
-- vect->ab = ab_quota;
```

```
-- vect->ib = ib_quota;
```

```
++ vect->ab = ab_quota *ab_fudge_factor;
```

```
++ vect->ib = ib_quota *ib_fudge_factor;
```

这些 factor可以是1.25, 1.5, 1.75 , 或者 中间数值。

以上两种方法可以初步定位问题，是否与MDSS clock以及系统带宽相关

# LCD蓝屏(under-run)问题分析

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## 3.增加VBP

如果 $VBP + VSYNC < 6$ ，可以考虑增加VBP，VBP的具体数值需要符合LCD panel的要求，否则LCD panel可能花屏或者黑屏。

## 4.添加实时logs，进行调试

<https://www.codeaurora.org/cgit/quic/la//kernel/msm->

[3.10/commit/?id=50df44137b1ada21b4cb294fbb0c2fe07133d683](https://www.codeaurora.org/cgit/quic/la//kernel/msm-3.10/commit/?id=50df44137b1ada21b4cb294fbb0c2fe07133d683)

和入这个patch之后，抓取logs 一直到问题复现为止，然后提供logs给高通技术支持团队。

## 5.设置CPU performance mode

```
adb shell stop thermal-engine
```

```
adb shell "echo 1 > /sys/devices/system/cpu/cpuX/online" (cpuX : cpu0, cpu1 ...)
```

```
adb shell "echo performance >  
/sys/devices/system/cpu/cpuX/cpufreq/scaling_governor" (cpuX: cpu0, cpu1, ...)
```



# LCD蓝屏(under-run)问题分析

6.测试连接USB后，问题是否重现。

7. 参考solution [00028556](#) 进行debug。

8.测试添加下面的patch后是否重现。

➤ msm\_isp\_update\_IB\_value\_to\_6400M.patch

```
--- a/drivers/media/platform/msm/camera_v2/isp/msm_isp_util.c
+++ b/drivers/media/platform/msm/camera_v2/isp/msm_isp_util.c
@@ -182,6 +182,9 @@ int msm_isp_update_bandwidth(enum msm_isp_hw_client client,
                                isp_bandwidth_mgr.client_info[i].ib;
}
}
+ if (path->vectors[0].ib < 6400000000)
+ {
+   path->vectors[0].ib = 6400000000;
+ }
msm_bus_scale_client_update_request(isp_bandwidth_mgr.bus_client,
isp_bandwidth_mgr.bus_vector_active_idx);

/* Insert into circular buffer */--
```

# LCD蓝屏(under-run)问题分析

- msm: msm\_bus: Mark certain rule transitions .patch

<https://us.codeaurora.org/cgit/quic/la/kernel/msm-3.10/commit/?h=APSS.FSM.3.0&id=a4bae19890e5f02727b441e91fee49ebbaabe104>

- L2PC delay patch.

```
--- a/arch/arm/boot/dts/qcom/msm8916-pm.dtsi
```

```
+++ b/arch/arm/boot/dts/qcom/msm8916-pm.dtsi
```

```
@ @ -149,7 +149,7 @ @
```

```
reg = <2>;
```

```
label = "l2-pc";
```

```
qcom,spm-l2-mode = "pc"; msm: msm_bus: Mark certain rule transitions .patch
```

```
- qcom,latency-us = <11030>;
```

```
+ qcom,latency-us = <17500>;
```

```
qcom,ss-power = <490>;
```

```
qcom,energy-overhead = <972390>;
```

```
qcom,time-overhead = <1580>;
```

先测试蓝屏问题是否消失如果添加上面的三个patch。

# LCD蓝屏(under-run)问题分析

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如果问题依然存在则需要按情况测试下面的patch。

- Camera\_PM\_QOS\_Request.patch //适用于camera preview , recording 蓝屏问题。



pm\_qos\_request.patch

- Video\_PM\_QOS\_Request.patch //使用于播放video 蓝屏问题。



VIDEO\_disable\_pm\_qos\_video\_playback.diff

# LCD蓝屏(under-run)问题分析

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如果问题依然存在则需要准备机器做bus Profiling。

请参考下面的文档准备好机器邮寄给技术工程师。

80-NF341-1

80-NJ799-1

## **Adaptive LMK(ALMK)功能在8994/92平台 使能**

# Adaptive LMK(ALMK)

ALMK特性可以改善低内存的场景：对于由于低内存导致的延迟和应用启动有改善。  
在高通其他平台已经默认使能（ 8996/76/56/53/52/39/37 ）

Patch：

[https://www.codeaurora.org/patches/quick/la/PATCH\\_146977\\_SBAforTaskidCaseid\\_20160407.tar.gz](https://www.codeaurora.org/patches/quick/la/PATCH_146977_SBAforTaskidCaseid_20160407.tar.gz)

如果对tuning ALMK参数有需求，请提Case高通支持

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## Questions?

<https://support.cdmatech.com>

