F220B – Boot optimization

# **Summary:**

Total Boot time: 53.53 sec’s without any modifications and 53.25 sec’s after modifications in bootloader, kennel and init.rc files.

The boot up time was calculated using a stopwatch, the time taken from power ON till the launch screen is displayed.

The modifications done are based on the reference provided by google at https://source.android.com/devices/tech/perf/boot-times

# **Bootloader:**

Could not capture the time taken because UART port is not available.

**Modifications**: Removed **dprintf(INFO) log** statements from code. Removing these statements did not show significant effect (reduced around 0.2 sec’s)

**Kernel:**

Boot time with out modifications was 1.6 sec’s and after modifications was 1.58 sec’s

Modifications: Removed unwanted kernel configs listed below.

CONFIG\_ANDROID\_LOGGER, CONFIG\_MSM\_DLOAD\_MODE=y

CONFIG\_USB\_GADGET\_DEBUG\_FILES, CONFIG\_USB\_GADGET\_DEBUG\_FS, CONFIG\_MSM\_RPM\_RBCPR\_STATS\_V2\_LOG

Note: - Many of the unwanted kernel configs were already disabled.

**Filesystem:**

Files system mount time without modifications and with modifications was the same 0.42 sec’s

Note: -As per reference link Filesystem tuning resulted in 20 sec’s reduction on a google pixel device, however similar modifications on F220B did not result in any significant reduction of boot time.

Modifications: Added the following in init.rc to tune the FS I/O

*on late-fs*

*/sys/block/mmcblk0/queue/iostats 0*

*/sys/block/mmcblk0/queue/iosched/slice\_idle 0*

*/sys/block/mmcblk0/queue/read\_ahead\_kb 2048*

*/sys/block/mmcblk0/queue/nr\_requests 256*

*/sys/block/dm-0/queue/read\_ahead\_kb 2048*

*on property:sys.boot\_completed=1*

*/sys/block/mmcblk0/queue/iostats 1*

*/sys/block/mmcblk0/queue/iosched/slice\_idle 10*

*/sys/block/mmcblk0/queue/read\_ahead\_kb 128*

*/sys/block/mmcblk0/queue/nr\_requests 128*

*/sys/block/dm-0/queue/read\_ahead\_kb 128*

**Init Process:**

Time taken by init process till “Boot Complete” was 30.9 sec’s before modification’s and 30.89 after modifications.

Modification: Removed the below unwanted services entries from Init.rc

*/system/bin/logd'*

*'/system/bin/lmkd',*

*'/system/bin/rfs\_access',*

*'/system/bin/debuggerd64'*

*'/system/bin/drmserver',*

*'/system/bin/installd',*

*'/system/bin/fakeperm',*

*'/system/bin/cnss\_diag',*

*'/system/bin/usb\_uicc\_client',*

*'/system/bin/qrngd',*

*'/system/bin/dts\_configurator',*

*'/system/bin/rilproxy',*

*'/system/bin/dpmd'*

*'/system/bin/cnss-daemon',*

*'/system/vendor/bin/RIDLClient.exe',*

*'/system/bin/ipacm-diag',*

*'/system/bin/ipacm',*

*'/system/bin/rfs\_access',*

*'/system/bin/imscmservice',*

*'/system/bin/ATFWD-daemon'*

*'/system/bin/qrngp'*

And added the following:

*on init*

*/sys/module/lpm\_levels/parameters/sleep\_disabled Y*

*on property:sys.boot\_completed=1*

*/sys/module/lpm\_levels/parameters/sleep\_disabled N*