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The following advisory notice enumerates several known issues specific and exclusive to the SARA-R410-02B-03 cellular modem. This modem will be incorporated into the following Particle SKUs with LTE Cat-M1 connection technology in production expected starting in September 2021:

- *E Series LTE (E402)*
- *Electron LTE (ELC402)*
- *B Series LTE NorAm (B402)*
- *Boron LTE (BRN402)*

Published: Sep 23, 2021

Mitigated issues

The issues listed below have been addressed and mitigated in Device OS 2.2.0. *While an upgrade to Device OS 2.2.0 is not mandatory for the operation of these SKUs, the following issues may impact the performance quality of these devices. Additionally, keeping one's fleet system firmware current with the latest GA Long Term Support (2.x) release will afford your fleet the most modern connectivity improvements, optimizations, and bug fixes. For more information about upgrading your fleet's Device OS firmware, see our documentation here and here.*

Cold boot connection time

Devices equipped with the SARA-R410-02B-03 cellular modem on Device OS < 2.2.0 may experience longer cold boot connection times ("cold boot" means a power-on from a powered-off state, as opposed to a boot from Sleep or a firmware-driven soft-reset). These connection times may increase by approximately 10 seconds. Devices outside of low-power, time-critical use-cases are unlikely to be negatively impacted.

This issue would manifest itself to a user as a device that upon boot from a powered-off state blinks its Status LED green for 10 seconds longer than expected. Device OS 2.2.0 mitigates the duration of cold boot connection time to previously expected values.

EFS recovery connection time

The SARA-R410-02B-03 introduces an EFS backup procedure to protect against filesystem corruption. This procedure can be triggered if power is suddenly removed from the device, which Particle recommends against in most instances. When this process is triggered, it can add an additional 30 seconds to the subsequent Cloud connection attempt for devices on Device OS < 2.2.0.

This issue would manifest itself to a user as a device that upon reboot blinks its Status LED green for 30 seconds longer than expected. Device OS 2.2.0 mitigates the duration of this recovery connection time issue.

Longer connection times in certain US regions

In certain locations SARA-R410-02B-03-equipped Boron and B-Series LTE Cat-M1 devices in the US could experience longer connection times. This is due to a band-selection issue and will only impact devices in regions where AT&T Band 5 is the only band available.

This issue would manifest itself to a user as a device that reports a number of UMNOPROF-related cycles in trace logging and takes a longer period of time to connect. Device OS 2.2.0 mitigates this issue.

Unmitigated issues

The issues listed below are hardware-contingent and are therefore not mitigated in Device OS 2.2.0.

Connection timeout period

The typical connection timeout period (the amount of time it takes for a device to recognize that it has an antenna disconnected or is in an environment without any cellular signal) is approximately 15-20 seconds. The SARA-R410-02B-03 increases this typical timeout period to about 40 seconds. This is unlikely to have a serious impact, apart from low-power use-cases in RF-poor environments.

This issue may manifest itself to a user as a device whose LED is breathing cyan even though the device is not connected for up to 40 seconds. Devices that are expected to perform some function upon disconnection, especially those without threading enabled, may take 20-25 seconds longer than expected to execute said function upon disconnection.