CTL TECHNICAL BULLETIN 112922

RE: NL71 series (LI9B) and NL81 Series (LI9D) Battery Replacement Guidance

NOTE This is only needed when batteries fail in the field

Summary:
CTL analyzes and monitors repair trends over model life. If there are trends, an investigation is opened with the ODM (Original Device Manufacturers), and Google. In some cases, CTL, the OEM, will open a support bug with Google. CTL's goal is to communicate and be transparent with customers as issues are found and to solve these issues as quickly as possible.

In late 2021/2022, the FSI image (Factory Shipping Image) was updated to accommodate a 2nd source battery with the model number SQU-2003. The original battery was model number SQU-1901. The SQU-1901 battery has been discontinued and is in short supply due to supply chain constraints. The replacement battery is SQU-2003.

If a device with an SQU-1901 battery requires a battery replacement and an SQU-2003 is used, the RO (Read Only) firmware will need to be updated to allow the Chromebook to function properly. If the Chromebook is not updated it may fall into battery lock mode when the ESC-REFRESH-POWER keys (Recovery Mode) or when a REFRESH-POWER (hard EC reset) is initiated. This would require plug-in power for the Chromebook to recover.

Symptoms:
A failed battery can be detected by not powering on or holding down ESC RFR POWER and getting the chrome OS missing error. This may require a battery replacement.

If you replace a battery SQU-1901 with a battery SQU-2003 the Chromebook will not enter recovery mode and will not power on without power assistance. The Chromebook could also battery lock when not used for many hours. This requires a power "bump" to turn on the Chromebook. Note: if the Chromebook has a battery SQU-2003 already installed, there is no need to update the Chromebook if replaced with an SQU-2003 battery. A simple battery replacement is all that is necessary.

Repair SOP:
Chromebooks produced earlier than **Work Week 2137 (September 2021)** with battery SQU-1901 which requires replacement. The Chromebooks can be identified by the serial number starting with LI9BTFQI**2136** and earlier.

If the replacement battery is SQU-2003 in order for the Chromebook to fully function to fully function, a special "short" shim will need to be run to update the firmware to function with the SQU-2003 battery fully. Total repair time is estimated to be approximately 20 minutes.

Chromebooks produced on Work Week 37 of 2021 (2137) and later or with battery SQU-2003 are not affected; there is no further action required to use a replacement SQU-2003 or SQU-1901 battery.

To regain full function, the following steps are required for correct battery function:

1. **Deprovision and place Chromebook in Developer mode (ensure the device is not in an auto-enroll OU)**
2. **Remove the bottom / D cover (If the existing battery is not working at all, the SQU-2003 will be able to get through these steps to flash if needed)**
3. **Plug in the Chromebook**
4. **Press ESC + F3 (refresh) + Power**
5. **Press CTRL + D and then ENTER to turn off OS Verification (If not turned off the shim image will not be recognized)**
6. **Immediately power down the Chromebook once OS verification is turned off (Do not transition to Developer Mode)**

7. **Disconnect Power**
8. **Remove the old battery SQU-1901**
9. **Install the new battery SQU-2003 - DO NOT plug into the Mainboard yet**
10. **Insert the USB SHIM**
11. **Press and hold ESC + POWER and then Plug in the Chromebook**
12. **With a USB drive, run the Short Shim to program the firmware**
    - **How to create the USB SHIM - LINK**
    - **To run the SHIM insert the USB Drive and go to the recovery mode (ESC + REFRESH + POWER) - Recovery Mode Info**
13. **The Chromebook automatically reboots into the factory test user interface information has been copied**
14. **Power off the notebook and disconnect the power cord**
15. **Connect the battery to the mainboard**
16. **Connect the power cord**
17. **Power on and start the SHIM testing process with the space bar**
18. **Finalize the SHIM process**
19. **Install the bottom / D cover and all the screws**
20. **Plug into power up and verify the charge**
21. **Unplug and test the battery function and update OS as needed**

If you have any questions, please submit a ticket for CTL to service the device if covered under warranty.

Please contact us if you have any questions.
Jeremy Burnett - jburnett@ctl.net or 971-327-0074

Sincerely,
CTL support team

Appendix

Chromebook	Original Battery	Replacement Battery	Action
NL71/NL81	SQU-1901	SQU-1901	Replace Only
NL71/NL81	SQU-1901	SQU-2003	SHIM and Replace
NL71/NL81	SQU-2003	SQU-2003	Replace Only
NL71/NL81	SQU-2003	SQU-2005	SHIM and Replace

SQU-1901 Battery Info:

Model name(型號/型号):SQU-1901
Simplo PN: 916Q2294H   3ICP5/57/80
鋰離子電池組 / 锂离子电池组 Rechargeable Li-ion Battery Pack
Rating:11.55Vdc   TYP 3700mAh / 42.73Wh MIN 3460mAh / 39.96Wh
額定容量:3460mAh 充電限制電壓:13.2V

SQU-2003 Battery Info:

Looking for the RO Firmware to be updated past: 11297.267.0

For example, this is good (as 13606 is higher than 11297). The SHIM updates the RO.