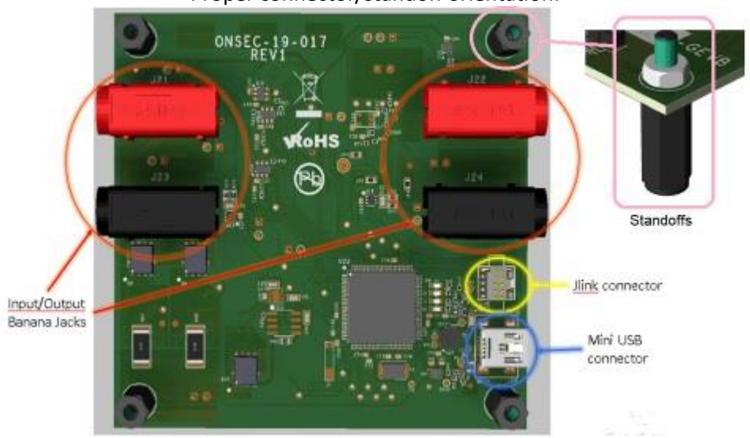
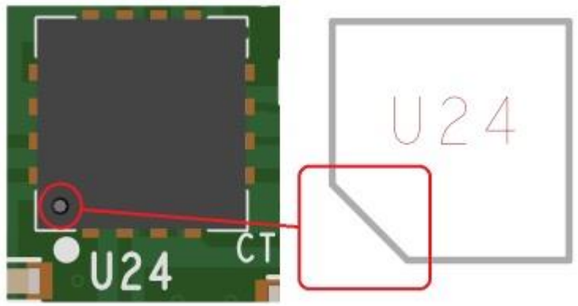
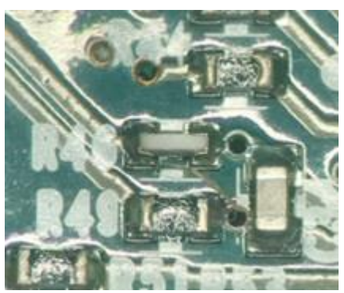
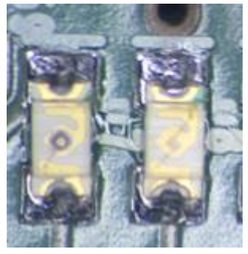
Visual Inspection

Please perform a brief visual inspection of every PCB to ensure adequate PCB fabrication and assembly quality. The tests are generic and intended to catch “big-ticket” manufacturing errors that could indicate electrical performance issues and the existence of obscure issues. Return to the manufacturer if any of these issues are present:

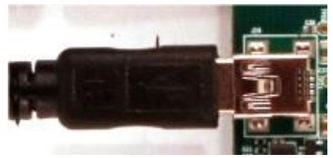
Test	Instructions		Pass Condition
All Board Tests	**Tests must be done for every board.**		
Component Orientation	1) Ensure proper orientation of all major connectors/mechanical components: a) Mini USB receptacle b) Input/output banana jacks c) JLink debug connector d) Standoffs e) <insert applicable items here> 2) Check orientation of polarized component against the assembly layer according to the “Layout” gerber document in Strata’s Platform Content tab. DO NOT use silkscreen as a reference for polarity. a) ICs: U3/U24 b) Diodes: D37/D38/D39/D40/D41/D42/D48/D49	Proper connector/standoff orientation:  Example of correct IC orientation: 	☐ All components installed with proper orientation
Component Solder Attach/ Seating	1) Check for noticeable errors in component installation: a) Tombstoned/misaligned components b) Ripped pads c) Cold solder joints	Example of improper component placement/seating:  Example of resistor rotated on its side: 	☐ No obvious solder attachment and seating issues for any components

		Example of ripped pads:  Example of questionably cold/hand-soldered joints: 	
Silkscreen Quality	1) Check for major silkscreen errors. At a minimum, ensure the following are legible: a) OPN marking b) ON logo c) Strata logo d) <insert applicable items here> 2) Ensure no silk on pads	Example of poor silkscreen quality: 	☐ No major silkscreen errors

Strata Functionality

The following tests are used to verify basic Strata connectivity and proper functionality of the UI/firmware for receiving telemetry and controlling the platform. Some tests only need to be completed once, while others must be completed for every board.

Test	Instructions		Pass Condition
One Time Tests	**These tests only need to be done one time per OPN.**		
Strata Version Confirmation	1) Ensure Strata version is appropriate for validation. 2) Open Strata and login. Create a login if you don't already have one. 3) Click the profile letter (first letter of the first name used for login registration step), in the top right corner of the screen, then select "About". 4) Check the Strata version in the dialog box that comes up. a) If version is out of date, install the newest Strata release. b) If the newest official release version is not new enough, contact SEC for a Beta release.		☐ Strata Developer Studio version is newer than v2.5.1, i.e. v2.5.1 will not work.
Strata Platform Selector	1) On "Platform Selection" tab find the STR-NCV7685-AUTO-LED-GEVB OPN in this list 2) Select "Browse Documentation"		☐ OPN is in the "Platform Selection" list ☐ At least one document is shown in "Platform Documents" section
All Board Tests	**Tests below this line must be done on every board.**		
Platform Registration Tool	1) TBD, contact Portland SEC for flashing instructions. Commands below are for internal reference. 2) STR-NCV7685-AUTO-LED-GEVB a. {"cmd":"set_platform_id","payload":{"platform_id":"4a1c2e5f-d0b0-4970-8c93-70a9234d195c","class_id":"4a1c2e5f-d0b0-4970-8c93-70a9234d195c","board_count":0}} 3) STR-NCV7684-AUTO-LED-GEVB		☐ TBD

	a. {"cmd":"set_platform_id","payload":{"platform_id":"ecd43c02-3e7c-4d5e-9231-aabc149c8772","class_id":"ecd43c02-3e7c-4d5e-9231-aabc149c8772","board_count":0}}		
Strata Detection	1) Close the platform by clicking “NCV7685 LED Tail Lights” tab and “Close Platfom” 2) Unplug mini USB if plugged in from previous steps (see picture to right for reference to which USB cable). 3) Open Strata and Login 4) Plug in board to computer using mini USB cable		☐ Strata detects board and is shown as connected in Platform Selector tab ☐ Click “Open Platform Controls” ☐ Hazard/emergency lights are flashing on the PCB and the UI
Car Demo Mode Tab	1) Turn on brake light, reverse, and blinkers (need to disable hazard to enable blinkers) to ensure functionality. Check for pass condition 1. 2) Turn off all lights and repetitively click the moon icon. Check for pass condition 2.		☐ 1. All tail lights work as expected. ☐ 2. The running lights are enabled when UI is darker.
Global ISET	1) Change to the “LED Control” tab in the UI. Check for pass condition 1. 2) Slide the “Global Current Set (ISET)” slider up to 10 mA. Check for pass condition 2.		☐ 1. All LEDs are enabled on the PCB. ☐ 2. LEDs get slightly brighter.
External Switches	1) Toggle the “Disable Onboard LED” switch to “On” for OUT1 through OUT12. Check pass condition. 2) Set all “Disable Onboard LED” back to “Off”.		☐ Corresponding channel of LEDs turns off on the PCB.
PWM Enable	1) Set “PWM Enable” control to “Off”. Check pass condition. 2) Return to “On”		☐ LEDs get much brighter.
Boost Voltage Adjust	1) Change to the “Power” tab in the UI. Ensure the LEDs are on. If not, click “Reset VLED”. 2) Reduce the “Boost Voltage Set” slider to 5.5V.		☐ The “LED Voltage (VLED)” reads 5.25V-5.75V.
Power Supply	1) Connect external power supply via the red/black banana plugs and set to 26V with at least 1A capability.		☐ The “Connector Voltage (VCONN)” reads 25-27V.
Buck Voltage Adjust	1) Change the “VLED Input Voltage Type” to “Buck”. Ensure the LEDs are on. If not, click “Reset VLED”. 2) Change the “Buck Voltage Set” slider to 10V.		☐ The “LED Voltage (VLED)” reads 9.5-10.5V.
Bypass Switch	1) Change the “VLED Input Voltage Type” to “Bypass”.		☐ The “LED Voltage (VLED)” reads 25V-27V.
ILED	1) On the “Power” tab a) Change the “VLED Input Voltage Type” to “Boost”. b) Change the “Boost Voltage Set” slider to 9V. c) Click “Reset VLED”. 2) On the “LED Control” tab a) Toggle “PWM Enable” to “Off”. b) Change the “Global Current Set (ISET)” to 1mA. 3) Go to the “Power” tab		☐ The “LED Current (ILED)” box displays 26-30mA.
IS Sense	1) Change to the “Power” tab.		☐ The “Supply Current mA (IS)” box displays 4mA-6mA.
VDD Disconnect	1) Change to the “SAM, OTP, and CRC” tab. 2) In the “SAM_CONF_1” row of switches change OUT12 switch to “On”. 3) Click the “VDD Voltage Disconnect” button.		☐ All the LEDs are disabled except OUT12.