ON Semiconductor®

NCV7685 RGB KIT

Test Procedure

Revision History

Revision	Comments	Release Date	By
0.1	Initial revision	2020-03-09	Austin. Shang

Warning:

Please Protecting Your Eyes !!!

Wear Dark Sunglasses

Cover the LEDs with Dimming Plate when Power on

Visual Inspection of Board and Components

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	<60s	1. No broken for board and components. 2. No shorted for components.	Only obvious issues can found by visual inspection.

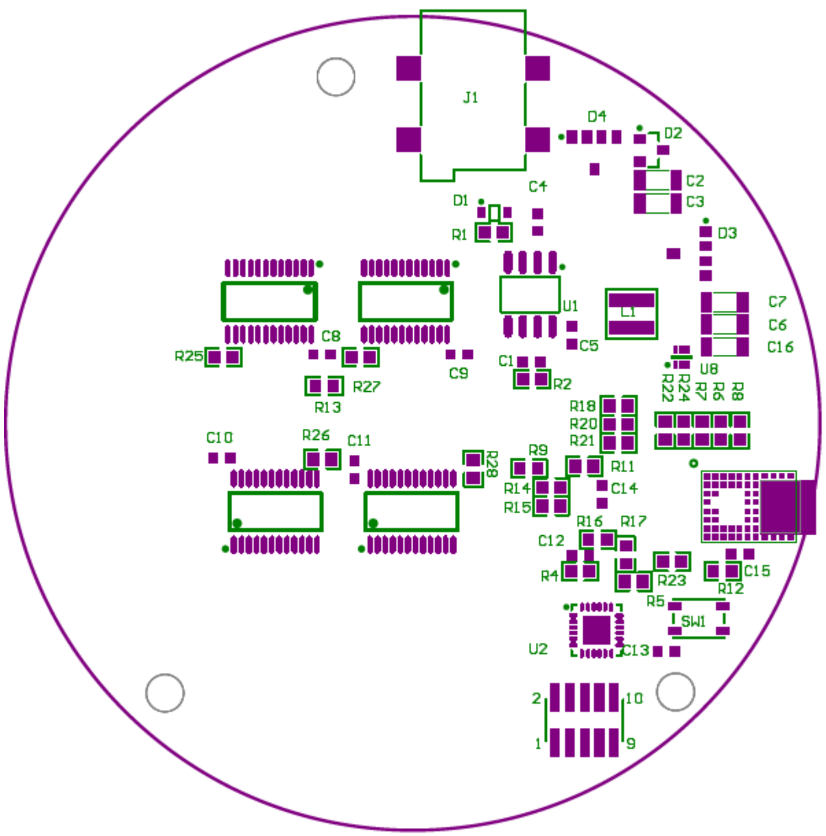


Figure 1. SoC and Driver components side

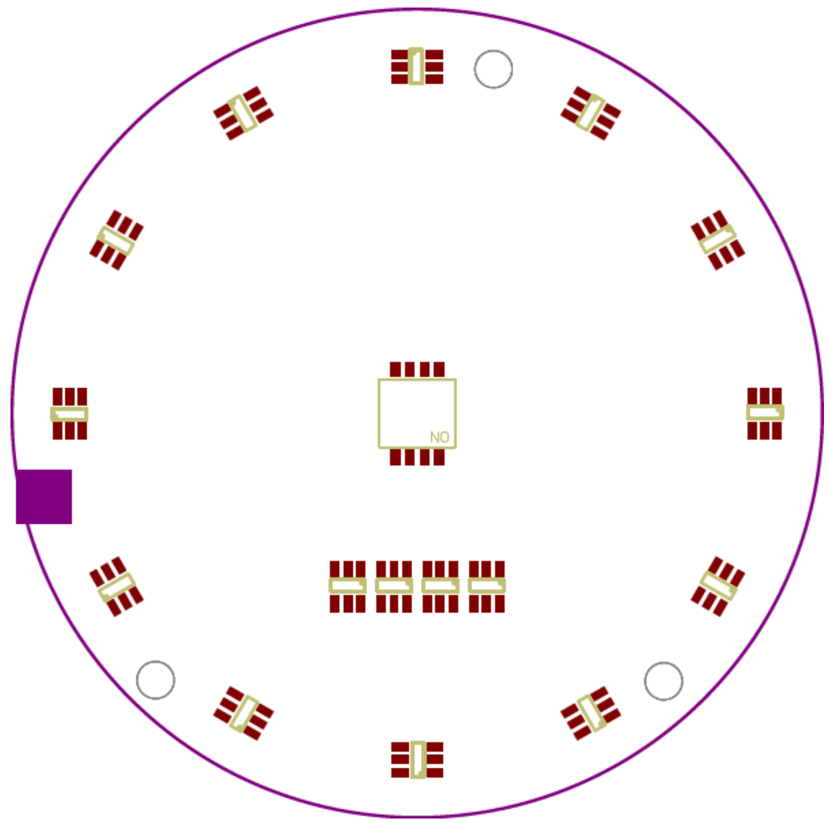


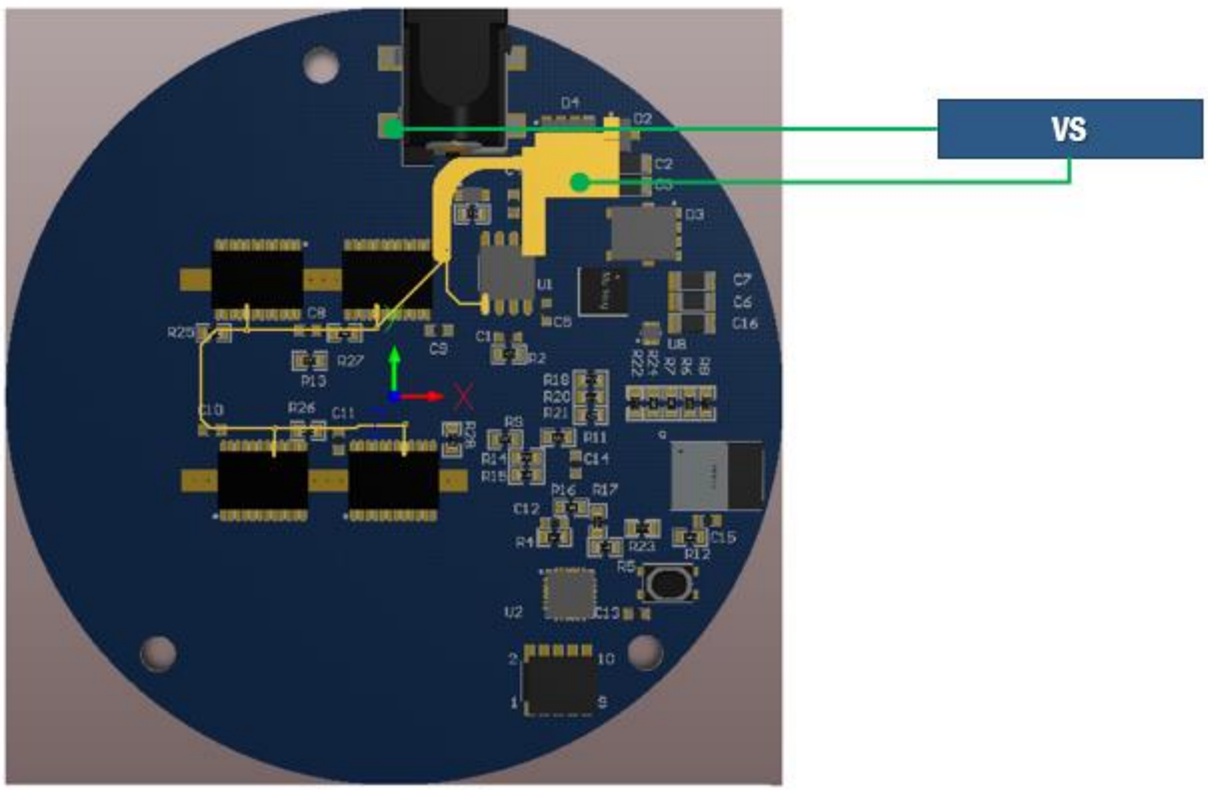
Figure 2. LEDs side

■ Electrical characteristics testing

Power on the kit with 12-24V power supplier, measure the voltage of the VS, VLED and VDD with voltmeter.

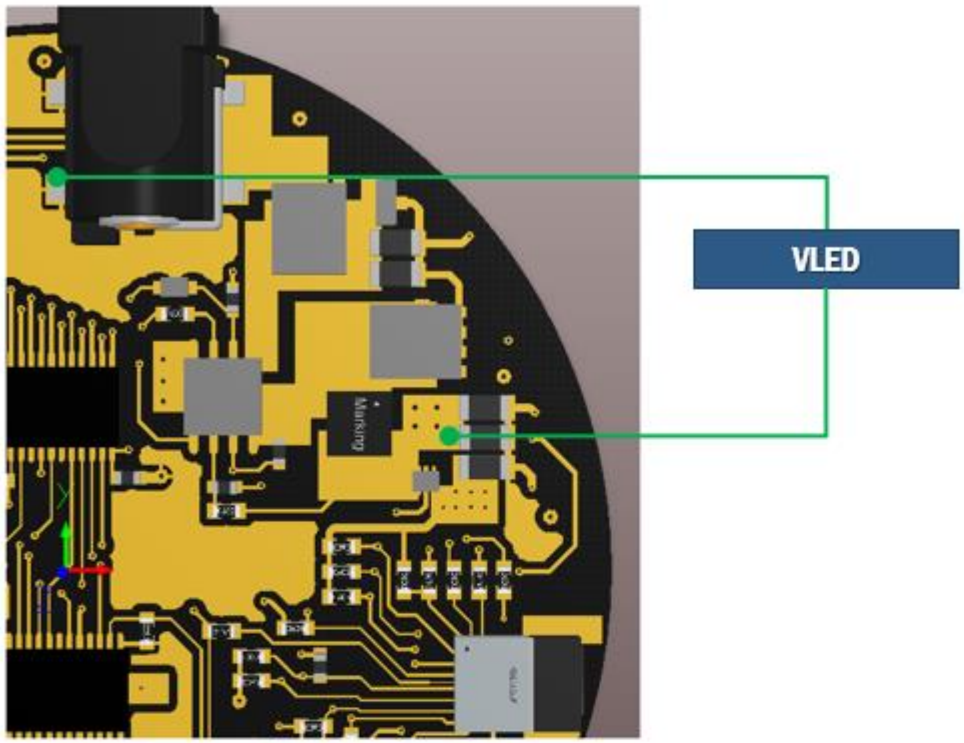
➢ **VS Voltage**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	<60s	0.3-0.7V lower than Vsupllier(12-24V)	



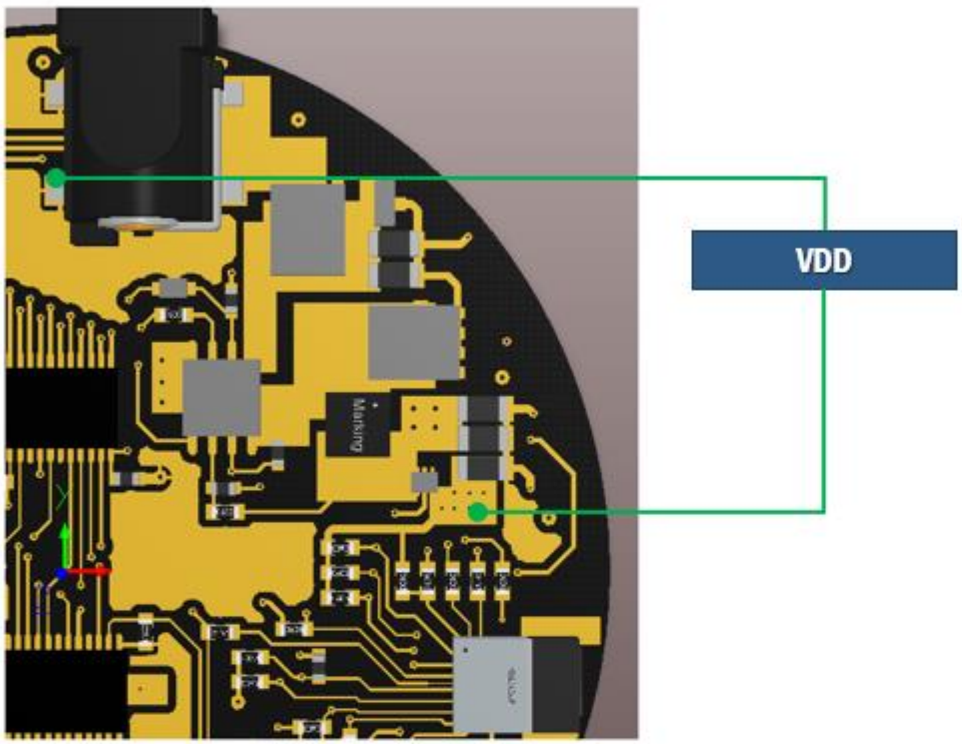
- **VLED Voltage**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	<60s	typically 3.8V	±0.2V



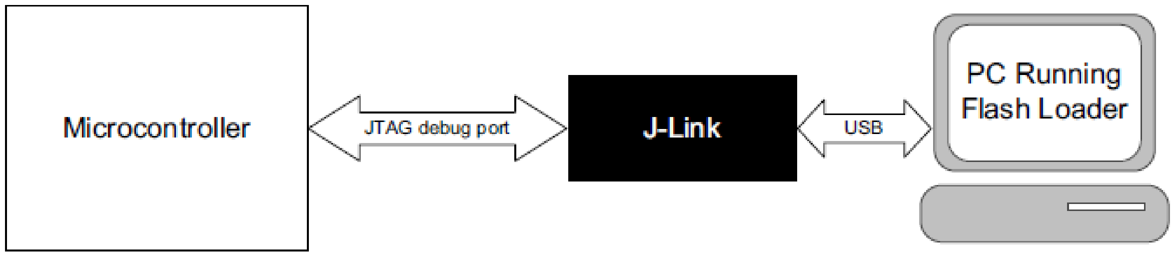
- **VDD Voltage**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	<60s	typically 3.3V	±0.2V



■ Programming RSL10 Flash Memory

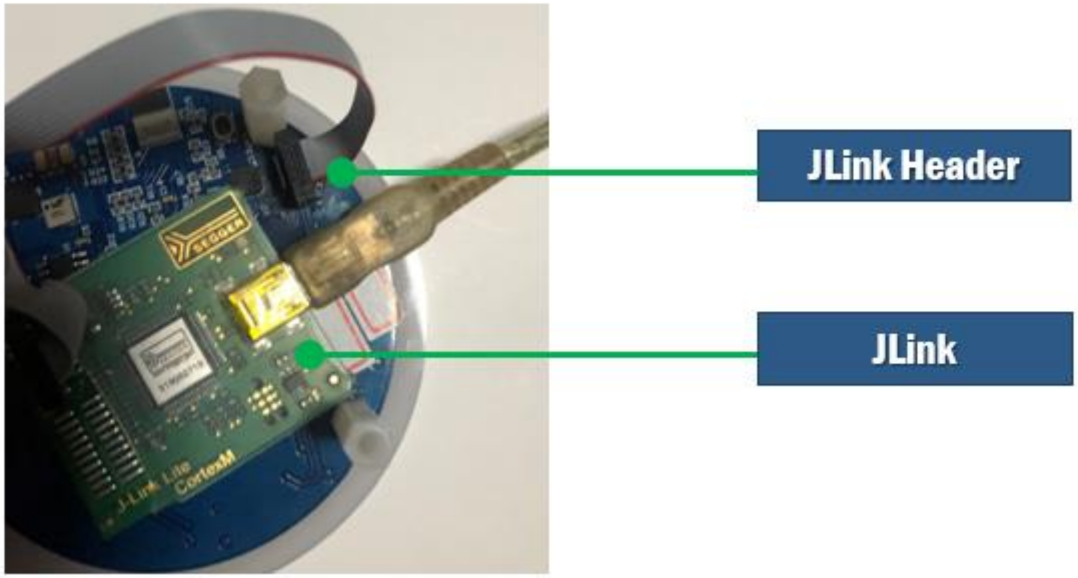
Following the document of “RSL10_stand_alone_flash_loader.pdf” to setup “FlashLoader.exe” tool, and programming the “RSL10 RGB LEDs Kit” with “RGB_1V6F.hex” file.



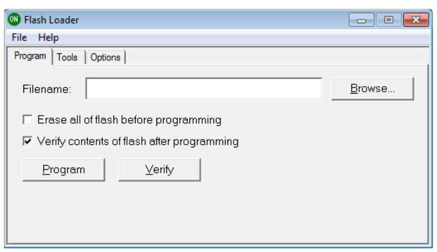
1. Install “J Link” driver.

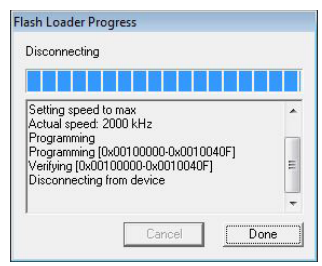
2. Install “Flash Loader” tool.

3. Power on the kit, and connect the 10-Pins programming header of J_Link.



4. Launch “Flash Loader” and load “RGB_1V6F.hex” file to finish programming.



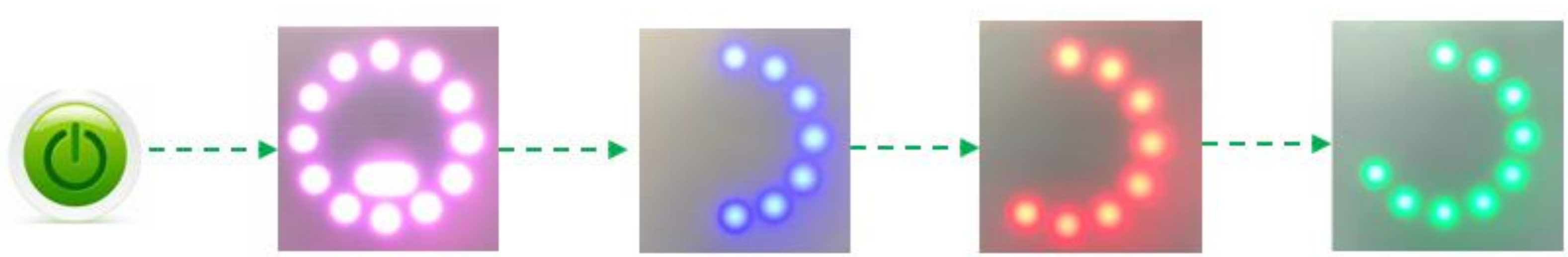


Functions testing

Power on the kit with 12-24V power supplier, test each defined functions.

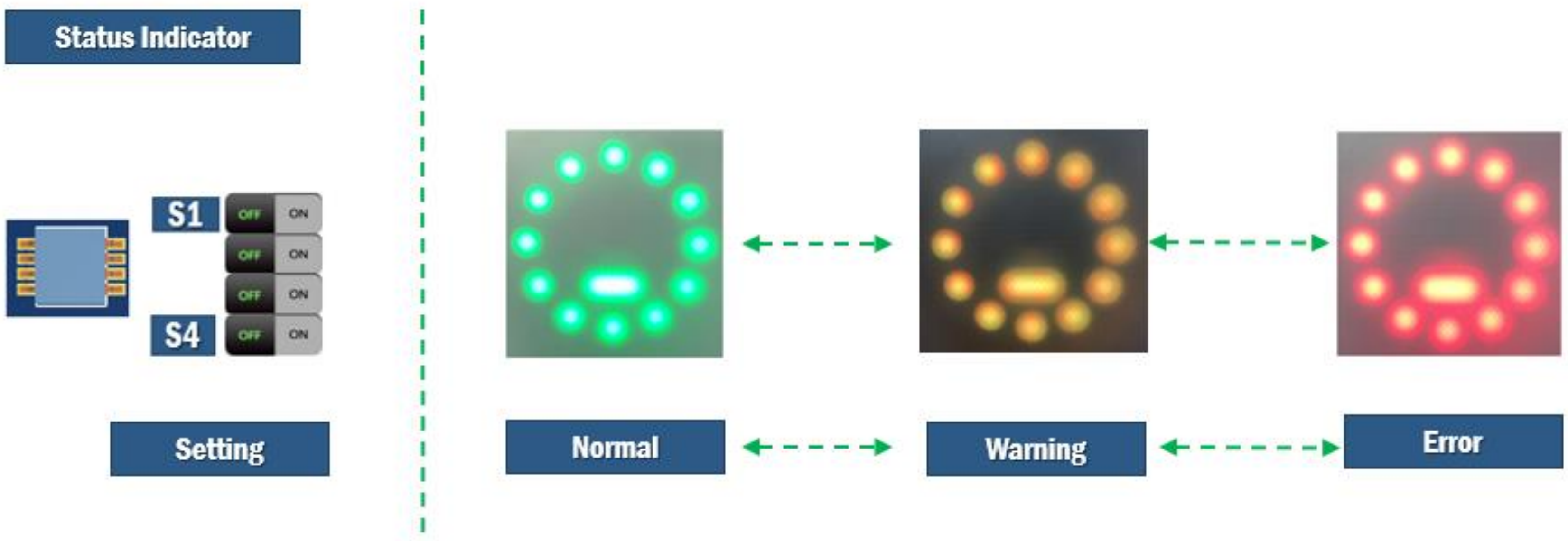
- **"Welcome" animation**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	<60s	All LEDs keep white 0.5S; Single LED in red, green and blue in sequence total last 1.92S; LEDs turn blue in turn total last 0.8S; LEDs turn red in turn total last 0.8S; LEDs turn green in turn total last 0.8S;	Just check whether the timing and color are correct; please do not care about the accurate period.



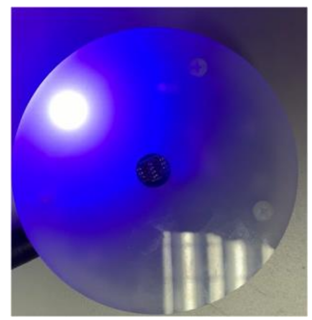
➢ **Status Indicator Mode**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	>10min	Keep all Switches off (0000); (0:off; 1:on ; (S4-S3-S2-S1)) The color of LEDs changes in gradient from green to orange, then to red; and goes back from red to green.	Just check whether the timing and color are correct; please do not care about the accurate period.



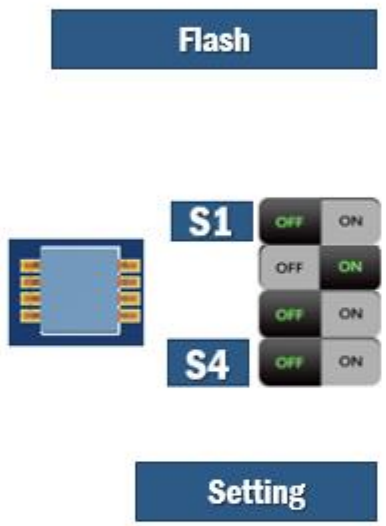
- **Second Clock Mode**

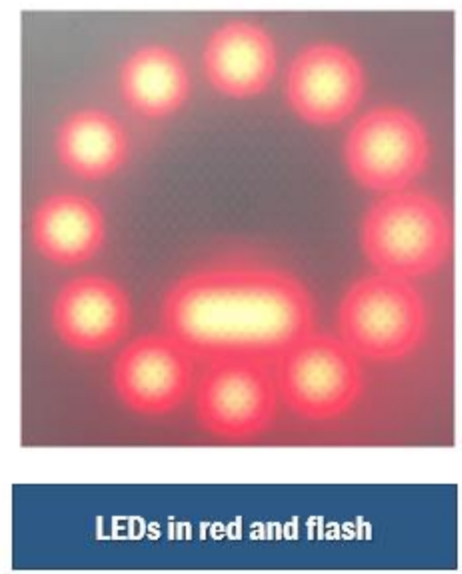
Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	>1min	Keep Switches(S4-S3-S2-S1) to 0001; (0:off; 1:on) Every second, only one LED in blue lights up clockwise direction in turn.	Just check whether the timing and color are correct; please do not care about the accurate period.



- **Flash Mode**

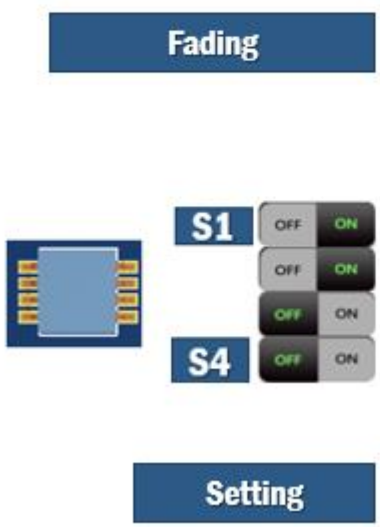
Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	>1min	Keep Switches to 0010; (S4-S3-S2-S1) (0:off; 1:on) All LEDs flash in red, keep on 200ms and keep off 200ms	Just check whether the timing and color are correct; please do not care about the accurate period.

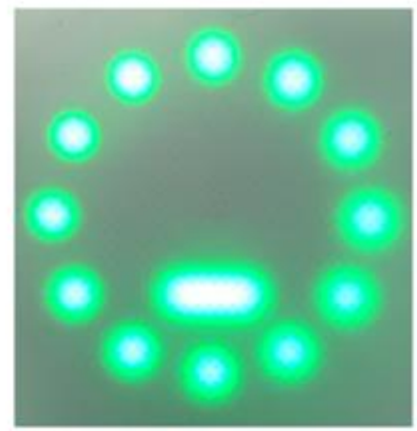




- **Fading Mode**

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	>5min	Keep Switches to 0011; (S4-S3-S2-S1) (0:off; 1:on) All LEDs fading in green, the period is about 51s.	Just check whether the timing and color are correct; please do not care about the accurate period.





LEDs in green and fading

- **Fading Mode**

Just Keep Switch S4 on and never mind of the setting of S2, S3, S4, the board comes into BLE mode. User use general mobile App to control LED's color and intensity for individual or all LEDs. For example, using "Light Blue" in IOS; "BLE Scanner" or" nRF Connect" in Android OS. It shows a green "smile face" firstly, and then changes the color and intensity according to the received five bytes data by BLE. The first three bytes stands for R, G, B values to mix the color, and the fourth data stands for intensity (4 level brightness For V1). The fifth byte stands for LED number, if this value is greater than 0x0f, all LEDs response.

Results (Pass/Fail)	Estimated Time	Items and Criticals	Comments
	>20min	Keep Switches to (1XXX); (S4-S3-S2-S1) (0:off; 1:on; X: don't care)	Protocol: (R, G, B, I, LED_No) ; The first byte is intensity value for RED; LED_No is LED's number,
		"smile face" for standby in BLE mode	No data received
		Sent data: 0x80, 0x00, 0x80, 0xFF,0x00	LED0 turn into Purple with max intensity; Others keep previous color and intensity;
		Sent data: 0xFF, 0x00, 0x00, 0x3F, 0x01	LED1 turn into Red with min intensity;
		Sent data: X, X, X, 0x00, 0x10 X: don't care of the value	All LEDs turn into off;
		Sent data: 0x00, 0xBF, 0xFF, 0xFF, 0x10	All LEDs in deep sky blue with max intensity
		Sent data: X, X, X, X, X	Sent five bytes following the protocol to test as you want;

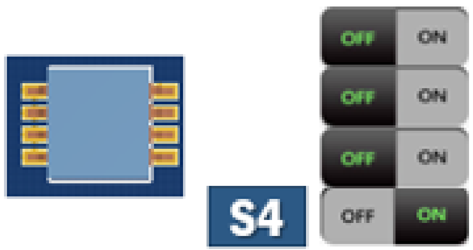


Figure 3. Standby interface in BLE Mode

Figure 4. Standby interface in BLE Mode

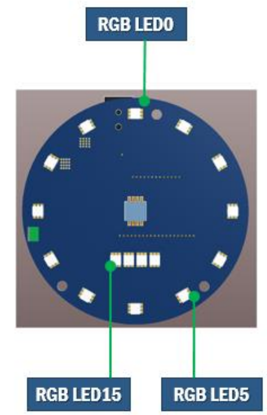


Figure 5. LED Number

- **BLE Apps**

The Generic BLE App is needed to test on the mobile phone, user can use “Light Blue” in IOS; “BLE Scanner” or” nRF Connect” in Android OS.

Here is an example using "Light Blue" App to control RGB lighting board:

1. Find and choose Peripheral of "NCV7685 RGB Kit."
2. Tap "Send RGB Setting" character.
3. Set RGB and Intensity values.
4. The board change color, intensity and LED_No.

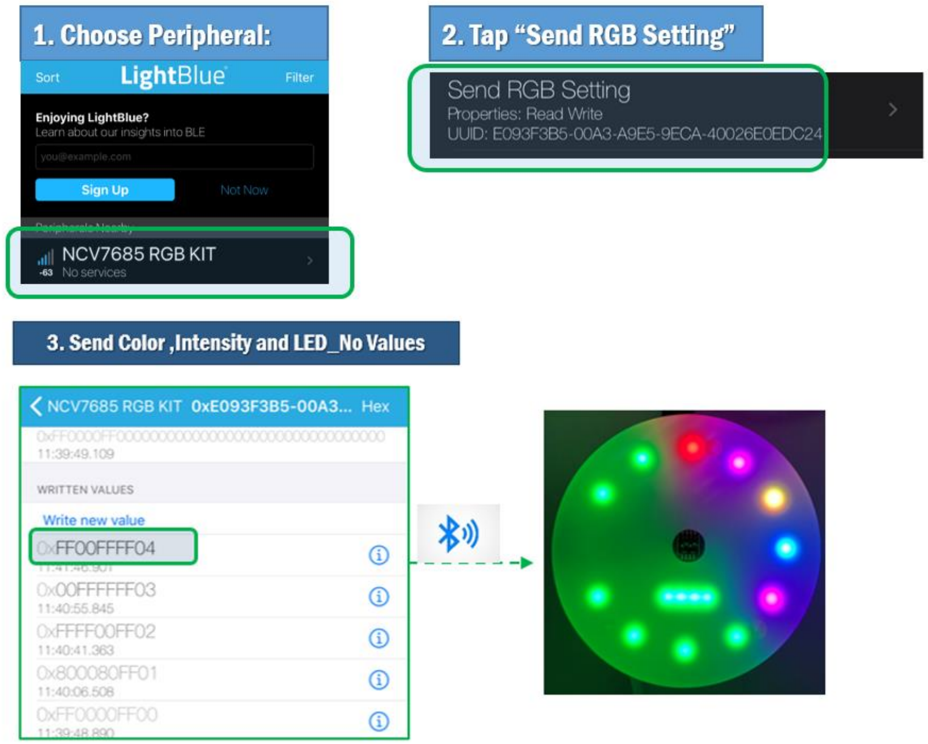


Figure 6. Using 'Light Blue' App to control the board

■ Assembling

Assemble the demo board as shown below