**Unit Test:** Solenoid Driver

**Test ID:** Test Case 1.2

**Test Description:**

The solenoid driver plays a key role in the operation of the nocLock. Special care has been taken to reduce the amount of power used, while the solenoid is being activated. This test will ensure that the output voltage to the solenoid has the correct characteristics, and also meets the specifications for power consumption. The operation of the inductive spike clamp diode will be tested.

**Equipment:**

1. Oscilloscope
2. Digital Multi-meter
3. Function Generator
4. Two Channel DC Power Supply

**Part(s):**

1. Assembled solenoid driver circuit
2. 5V Solenoid (P/N: ZHO-0420L/S)

**Reference:**

1. T02\_nocLock\_rev3.sch (for reference)

**Setup:**

J6 is the output of the solenoid driver module, and the solenoid will be plugged into it. Viewing the voltage across the J6 will allow the voltage to be monitored and tested. Applying 5V to R11 will activate the circuit, and removing it will deactivate the circuit and also show the results of the clamp diode.

**Procedure:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Action** | **Expected Result** | **Pass/Fail** | **Comments** |
| 1. | Plug in solenoid to J6 | N/A |  |  |
| 2. | Apply 9VDC to pin 1 of J6. | N/A |  |  |
| 3. | Attach scope probe across J6, ground clip on pin 2. Adjust scope to 2V/div & .5s/div | N/A |  |  |
| 4. | Apply 5VDC to R11. | Solenoid should activate, on the scope the voltage across the solenoid, should spike to supply voltage and then decay to half of supply, after approximately 10ms. |  |  |
| 5. | Remove 5VDC from R11. | Solenoid should deactivate. On the scope, the voltage should drop to 0V and should not undershoot 0V by more than 0.7V. |  |  |