| | | | | | | |
|---|---|---|---|---|---|---|
| **Test Author:** Team 11 | | | | | | |
| | **Test Case Name:** | Battery Functionality Test | | | **Test ID #:** | BAT-FT-01 |
| | **Description:** | *Test whether the li-po battery charges via the micro USB port without physical removal, and test whether it can power the system portably.* | | | **Type:** | □ black box<br>☑ white box<br>□ _____ |
| **Tester Information** | | | | | | |
| | **Name of Tester:** | Cesar, Anthony | | | **Date:** | 2022-12-05 |
| | **HW/SW Version:** | 1.0 | | | **Time:** | 14:47 |
| | **Setup:** | *Requires a fully assembled system. Disassemble the enclosure so that the battery is accessible.* | | | | |
| **STEP** | **Action** | **Expected Result** | **PASS** | **FAIL** | **N/A** | **Comments** |
| 1 | Measure initial battery voltage | Expected voltage between 3.2 and 4.2 V | Y | | | 3.98 V |
| 2 | Plug 3.3+ V battery into system (With power switch off) | There should be no noticeable change | | | Y | |
| 3 | Turn on system power switch | The display and the “on/off” LED should turn on | Y | | | LED is dim |
| 4 | Run hardware for 3 hours of runtime | If battery fully discharges, display and LED will turn off | Y | | | Ran for 10 minutes |
| 5 | Measure battery voltage | Expected voltage will be lower than the initial voltage | Y | | | 3.97 V |
| 6 | Plug in USB power cable to charge battery to full | The “power in”, and “charging” LEDs should turn on<br>Expected voltage should be around 4.2 V | Y | | | |
| 7 | Repeat steps 1-6 | Results should be similar at each step | Y | | | |
| | **Overall test result:** | | Pass | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Test Author:** Team 11 | | | | | | |
| | **Test Case Name:** | Hardware Test | | | **Test ID #:** | HW-FT-01 |
| | **Description:** | *Test that both the hardware inputs / outputs function as expected. Also tests additional hardware components like the voltage regulator.* | | | **Type:** | □ black box<br>☑ white box<br>□ _____ |
| **Tester Information** | | | | | | |
| | **Name of Tester:** | Cesar, Anthony | | | **Date:** | 2022-12-05 |
| | **HW/SW Version:** | 1.0 | | | **Time:** | 15:00 |
| | **Setup:** | *Requires a fully assembled system with enclosure disassembled, and the battery disconnected. Should include test software to verify the display and button functionality. The power switch should initially be turned off.* | | | | |
| **STEP** | **Action** | **Expected Result** | **PASS** | **FAIL** | **N/A** | **Comments** |
| 1 | Power the system with 5.0 V power supply, current limited to 150 mA into TP2, and GND into TP1. | Only the “power in” LED should turn on. | Y | | | |
| 2 | Turn on system power switch | The display and the “on/off” LED should turn on. Display Main Menu. | Y | | | |
| 3 | Measure voltage regulator TP6 | Should read 3.3 V (+3.3V DC) | Y | | | Measured 3.27 V |
| 4 | Unplug power supply, and use USB power. | | | | Y | |
| 5 | Open Arduino IDE and upload the test software | The software should upload with no errors, and the display will read “Nerd Box v1.0 Test” | Y | | | |
| 6 | Open the serial monitor and press each button | Serial monitor and display show name of each button pressed sequentially. | Y | | | |
| | **Overall test result:** | | Pass | | | |

| **Test Author:** Team 11 | | | | | | |
|---|---|---|---|---|---|---|
| | **Test Case Name:** | Software Programmability Test | | | **Test ID #:** | SW-FT-01 |
| | **Description:** | *Tests the user interface functionality, and the ability to upload custom game software to the device.* | | | **Type:** | ☑ black box<br>□ white box |
| **Tester Information** | | | | | | |
| | **Name of Tester:** | Cesar, Anthony | | | **Date:** | 2022-12-05 |
| | **HW/SW Version:** | 1.0 | | | **Time:** | 15:20 |
| | **Setup:** | *Requires a fully assembled system powered via battery or USB power.* | | | | |

| **STEP** | **Action** | **Expected Result** | **PASS** | **FAIL** | **N/A** | **Comments** |
|---|---|---|---|---|---|---|
| 1 | Turn on system power switch. | The display and the “on/off” LED should turn on. Display Main Menu. Highlight Main Menu option 1: “Floppy Derp” | Y | | | |
| 2 | Press the D-direction button. | The display highlights Main Menu option 2: “Insert your game here!” | Y | | | |
| 3 | Press L-direction, R-direction, D-direction, and B buttons any number of times in random order. | No change after any key press. | Y | | | |
| 4 | Press the D-direction button. | Highlight Main Menu option 2: “Your Game Here” | Y | | | |
| 5 | Press A button. | The display reads “Plug in the Nerd Box and upload game code to select here! (Press B to return to Main Menu)” | Y | | | |
| 6 | Press B button. | Return to Main Menu. | Y | | | |
| 7 | Upload Floppy Derp game code. | The code should compile with no errors. Display Main Menu. | Y | | | |
| 8 | Press L-direction, R-direction, U-direction, and B buttons any number of times in random order. | No change after any key press. | Y | | | |
| 9 | Press A button. | Execute the Floppy Derp programmable software. | Y | | | |
| | **Overall test result:** | | Pass | | | |