

P18026 – Battery Test Plan

Objective:

To determine if the battery matches the theoretical calculations. In order to do this, charging as well as discharging must be measure. Measurements are obtained during procedure section and are recorded in the results section. If the results are similar, then the battery is functioning properly and is acceptable to be used for the project. If the results are not similar, then the battery is not functioning properly and is therefore not acceptable to be used for the project and a new one must be ordered and retested.

Equipment Required:

- Battery
- Multimeter
- Timer/Stopwatch
- Alligator Clips
- Resistive Load (Of Equivalent Value of Powered Circuit)
- Manual Switch (Ex: Light Switch)
- Battery Charger

Procedure:

Calculations:

- Take the Amp-Hours of the battery and multiply it by 80% (worst case scenario) to determine the max Amp-Hours that the battery will last. The battery must last 2 hours, so divide thee calculated max value by 2, as to get the value per hour.

Charging:

- Attach the battery to the multimeter using the alligator clips.
- Attach Battery to the battery charger at the same time the timer/stopwatch is turned on.
- Monitor the battery for the duration of charging for any undesired behavior.
- Once fully charged, stop the timer/stopwatch and record the value in the results section.
- Disconnect the set up.

Discharging:

- Attach battery to the multimeter using the alligator clips.
- Attach battery to the resistive load and manual switch using the alligator clips.
- Turn the manual switch to the “ON” position at the same time the timer/stopwatch is turned on.
- Monitor the battery for the duration of discharging for any undesired behavior.
- Once fully discharged, stop the time/stopwatch and record the value in the results section.
- Disconnect the set up.

Results:

Charging:

<i>Trial Number</i>	<i>Charging Time In Datasheet</i>	<i>Measured Charging Time</i>	<i>Pass/Fail – Why?</i>
1	1.5 Hours	1.55 Hours	Pass – Accurate to Datasheet
2	1.5 Hours	1.5 Hours	Pass – Accurate to Datasheet
3	1.5 Hours	1.55 Hours	Pass – Accurate to Datasheet

Discharging:

<i>Trial Number</i>	<i>Load Resistance</i>	<i>Calculated Discharging Time</i>	<i>Measured Discharging Time</i>	<i>Pass/Fail – Why?</i>
1	7 Ω	4 Hours	4 Hours, 2 Minutes	Pass – Accurate to Calculation
2	7 Ω	4 Hours	4 Hours, 10 Minutes	Pass – Accurate to Calculation
3	7 Ω	4 Hours	4 Hours, 5 Minutes	Pass – Accurate to Calculation

Notes:

A load resistance of less than 7 Ω would cause the resistor (standard or box) to burn and smoke