Proof of Concept Test Demo Sheet[[1]](#footnote-1) (Example)[[2]](#footnote-2)

**TEAM NAME: Ocean’s 7 (-1) Test Date & Time: 12/8/16**

**Test # and Name (from PoC plan) 1.B. Voltage Conversion Confirmation Test Type: Verification Testing**

1. **Purpose of Test and How it Relates to Project (Brief, concise, but complete, description):**

Functionality Demonstrated:  Buck conversion from 14.8V to: 5V at 1A, 12V at 1A; Boost conversion from 14.8V to: 48V at 1A, 48V at 0.5A voltage conversion and maximum current limits meet specifications.  These will be tested to ensure stable output voltages for subsystems.

The voltage conversion board is responsible for stepping up/down the 14.8V input voltage to source the required voltage levels of the CU RoboSub subsystems and provide enough current capacity to power all of the anticipated subsystems.

1. **Test Setup, Pre-conditions, and Procedure (Brief, concise, but complete, description):**

Test Setup: Oscilloscope, power supply, and test load provided

Preconditions: Power supply set to output 14.8V at 3A, Oscilloscope set to measure voltage up to 50V, and voltage conversion board soldered together

Procedure:

* Attach the voltage source high and low voltage lines to the input and ground pins, respectively, of the power systems test board.
* Turn on voltage source.
* Using the multimeter, measure output voltages between following test points and ground:
  + 5V Test
  + 12V Test
  + 48V Test-1
  + 48V Test-2
* Turn off voltage source
* Using the multimeter set to measuring resistance, adjust the rheostat to 5 Ohms +/- 1%, attach between 5V Test and ground
  + Using the multimeter, measure the voltage drop across the rheostat
  + Turn off voltage source, remove the rheostat.
* Using the multimeter set to measuring resistance, adjust the rheostat to 12 Ohms +/- 1%, attach between 12V Test and ground
  + Turn on voltage source.
  + Using the multimeter, measure the voltage drop across the rheostat
  + Turn off voltage source, remove the rheostat
* Using the multimeter set to measuring resistance, adjust the rheostat to 48 Ohms +/- 1%, attach between 48V Test-1 and ground
  + Turn on voltage source
  + Using the multimeter, measure the voltage drop across the rheostat
  + Turn off voltage source, remove the rheostat
* Using the multimeter set to measuring resistance, adjust the rheostat to 96 Ohms +/- 1%, attach between 48V Test-2 and ground
  + Turn on voltage source
  + Using the multimeter, measure the voltage drop across the rheostat
  + Turn off and remove the voltage source.  Remove the rheostat

1. **Success Criteria (feasibility) / Selection Criteria (alternatives) / Design Info (gathering): (Concise, complete, quantitative):**

Voltage outputs on the power systems test board:

5V Test measures 5V +/- 1%

12V Test measures 12V +/- 1%

48V Test 1 measures 48V +/- 1%

48V Test 2 measures 48V +/- 1%

Voltage drop across rheostat on the power systems test points

5V Test measures 5V +/- 1%

12V Test measures 12V +/- 1%

48V Test-1 measures 48V +/- 1%

48V Test-2 measures 48V +/- 1%

1. **Instructional Team Notes:**
2. **Test outcome and what was learned (toward finalizing design):**

1. One sheet for each test of your prototyping plan. So if your team has 5 numbered tests, you will turn in 5 sheets. [↑](#footnote-ref-1)
2. It is not mandatory to follow this exact format (including using color), but each section above must appear in your sheet and in this order. Fill in headings and sections 1-3 in your word processor before the test and before you distribute this sheet to the instructional team. Sections 4 & 5 will be used by the instructors. [↑](#footnote-ref-2)