

Erebus Labs

STEM SENSORS

TEST PLAN

Version 1.0

6/1/2014

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1 INTRODUCTION

1.1 THIS DOCUMENT

This document is the general overview for the testing of the Erebus Labs Sensor system.

1.2 CONDUCT OF THE SYSTEM TEST

These tests will be conducted by Scott Lawson, Bryan Button, Chris Clary, and Max Cope within the engineering facilities at Portland State University.

1.3 RECORDING OF RESULTS, WITNESSING AND AUTHORITIES

The results of this test can be found in Appendix A.

2 REFERENCE DOCUMENTS

2.1 DESIGN DOCUMENTATION

All of the following documents can be found in the Erebus Labs GitHub Repo:

PCB Board - Main_Board_SW2.pdf

Design_Specification.pdf

System_Architecture.pdf

Technical_Reference_Manual.pdf

2.2 OTHER

Microcontroller – CY8C32FamilyDatasheet.pdf

Switching Regulator – LTC3534fb.pdf

PCB Layout – Board.png

Test Sheets – TestPlanTestSheets.xlsx

3 EREBUS STEM SENSOR SYSTEM

3.1 OPERATIONAL DESCRIPTION

The STEM Sensor uses two units, a sensor module and a base station, to record and store sensor data. The sensor module connects to the base station via Ethernet connectivity. Measured data is stored in the microcontroller and retrieved via USB using a computer.

3.2 COMPUTATIONAL METHODS

Current testing procedures require no computation.

4 PRETEST PREPARATION

4.1 TEST EQUIPMENT

4.1.1 Standard Voltmeter

A voltmeter will be used to measure all voltages.

4.1.2 Standard Oscilloscope

An oscilloscope will be used to measure all changes in logic level.

4.1.3 Power Supply

Power supply capable of outputting 7V.

4.2 TEST SETUP AND CALIBRATION

All measurement equipment should be calibrated before operation. Calibration should be performed by manufacturer's standards.

5 SYSTEM TESTS

The following section describes the tests and their proper function.

5.1 FUNCTIONAL CHECKS

5.1.1 Power Supply Voltage

Checks to make sure that Power is being supplied to the board at the correct voltages. All measured voltages must be $\pm 5\%$ of desired voltage to pass test. A voltmeter will be used to measure all voltages.

5.2 BUTTON OPERATION

5.2.1 Power to Buttons and Functionality

This purpose of this test is to make sure the push buttons are receiving power and are operating correctly.

5.3 LED OPERATION

5.3.1 LED Indication

The purpose of this test is to make sure that the LED is displaying the correct color combinations.

5.4 UNIT TESTING

5.4.1 Sensor Module Operation

Verify the sensor module is receiving correct supply voltage and is returning a valid voltage signal back to the base station.

5.4.2 Start/Stop Button Operation

Verify the operation of start and stop functionality.

5.4.3 USB and User Interface

Verify that three units USB communication is properly sending and receiving data.

6 APPENDIX A: TEST RECORD SHEETS