

Team #:	P16104	Team Name:	Microfluidic Spectroscopy in Cubesats
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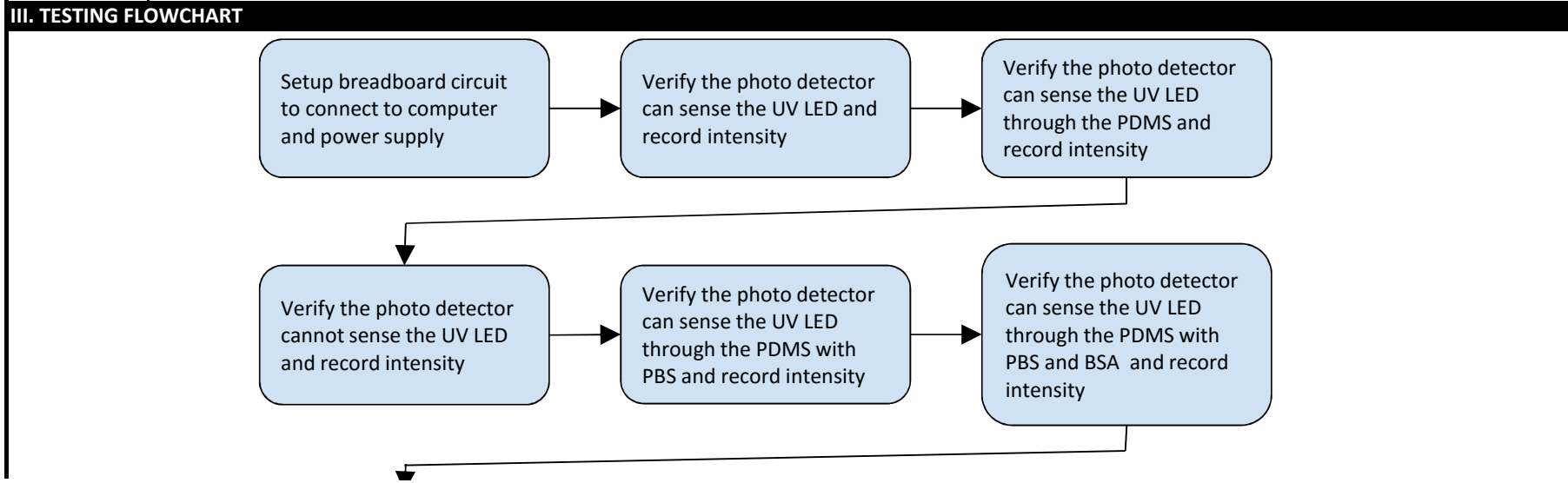
Subsystem/ Function/ Feature Name:	Photodiode Sensitivity Testing
Date of Test:	
Performed By:	August Allen, Andrea Mazzocchi, Mallory Rauch, Darin Berrigan, Anna Jensen, Matthew Glazer, James Lewis
Tested By:	August Allen, Andrea Mazzocchi, Mallory Rauch, Darin Berrigan, Anna Jensen, Matthew Glazer, James Lewis

Concluded Condition of meeting Engineering Specification: **X- Does Not Meet Marginal Value**

I. TESTING SPECIFICATION								
Specification Number	Importance	Source	Function	Specification (Metric)	Unit of Measure	Marginal Value	Ideal Value	Comments/Status
S1	9	PRP	System	Signal Detection	V	1.5+-0.5		

II. EQUIPMENT REQUIRED	
Specification Number	Equipment or Instrumentation required
S1	Benchtop power supply, photodiode w/ complimentary circuitry, laptop, PDMS, BSA

III. DATA COLLECTION STRATEGY	
Specification Number	Data acquisition strategy
S1	The goal of this test is to perform a full system test. By determining if the photodetector can sense the emissions of the BSA, we can proceed to packaging our device into a Cubesat structure



Verify the photo detector can sense the UV LED through the PDMS with PBS and BSA with filter and record intensity

IV. RAW DATA ACQUISITION

Test	Sensor Data (0-255)
Air only	130
PDMS only	105
Filter	0
PDMS w/ PBS	124
PDMS w/ PBS w/ BSA	4
PDMS w/ PBS w/ BSA w/ Filter	0

V. RESULTS

Photodetector with UV LED:

Passed

Photodetector with UV LED through optical filter

Passed

Photodetector with UV LED through PDMS

Passed

Photodetector with UV LED through PDMS and optical filter

Passed

Photodetector with UV LED through PDMS with BSA

Failed

Photodetector with UV LED through PDMS with BSA and optical filter

Failed

VI. CONCLUSION

The system was tested component-by-component. The failures began when BSA was introduced to the system. Once it was, the photodetector was unable to sense the

wavelengths of both the UV LED and the BSA. The test failed because the photodetector could not sense the BSA wavelength. It is suspected that the voltage levels are too small for the microcontroller to detect. We came to this conclusion at the first failure where there was a voltage reading, but it was very small. Our next solution will be to add an op amp to the output to increase the signal strength.