

<b>Team #:</b>	P16104	<b>Team Name:</b>	Microfluidic Spectroscopy in CubeSats
<b>Date:</b>	4/13/2016 9:21	<b>Document Owner:</b>	Mallory Rauch
<b>Revision #:</b>	1		

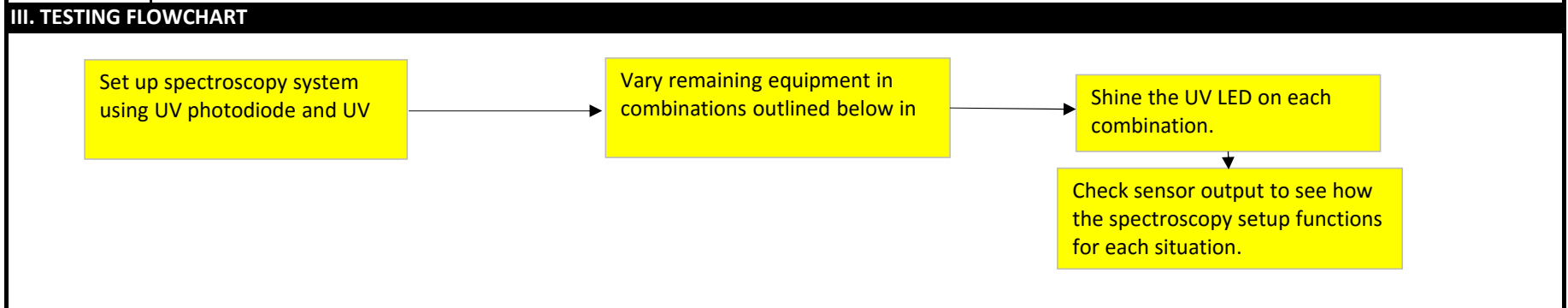
Subsystem/ Function/ Feature Name:	Spectroscopy Setup Testing
Date of Test:	4/5/2016
Performed By:	__Andrea Mazzocchi, Matthew Glazer, James Lewis, Darin Berrigan, August Allen, Mallory Rauch, Anna Jensen__
Tested By:	

Concluded Condition of meeting Engineering Specification	Conditional Pass
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I. TESTING SPECIFICATION								
Specification Number	Importance	Source	Function	Specification (Metric)	Unit of Measure	Max Value	Min Value	Comments/Stat
ER 9, ER 10, ER 12, ER 13, ER 14 , ER 15	9	PRP	System	Photodiode Output	V	0	5	

II. EQUIPMENT REQUIRED	
Specification Number	Equipment or Instrumentation required
ER 9, ER 10, ER 12, ER 13, ER 14 , ER 15	UV photodiode, box, PDMS test well, filter, UV LED, water, hemoglobin, PBS, BSA, alcohol, 3-methylindole

III. DATA COLLECTION STRATEGY	
Specification Number	Data acquisition strategy
ER 9, ER 10, ER 12, ER 13, ER 14 , ER 15	The purpose of this test is to prove that tryptophan fluorescence can be detected by the spectroscopy setup. This is a general flowchart for the various tests that were performed.



#### IV. RAW DATA ACQUISITION

Photodiode Reading (Volts)	Box	LED	PDMS	Filter	Water	Hemoglobin	BSA (10mg/mL)	3-Methylindole in Alcohol
0.181	No	No	No	No	No	No	No	No
0	Yes	No	No	No	No	No	No	No
5 (flooded)	No	Yes	No	No	No	No	No	No
5 (flooded)	Yes	Yes	No	No	No	No	No	No
5 (flooded)	Yes	Yes	Yes	No	No	No	No	No
0.132	Yes	Yes	No	Yes	No	No	No	No
0.117	Yes	Yes	Yes	Yes	No	No	No	No
<b>0.078</b>	Yes	Yes	Yes	Yes	Yes	No	No	No
0.088	Yes	Yes	Yes	Yes	Yes	Yes	No	No
<b>0.103</b>	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3.34	Yes	Yes	Yes	No	Yes	Yes	No	No
5 (flooded)	Yes	Yes	Yes	No	Yes	No	No	No
2.36	Yes	Yes	Yes	No	No	No	Yes	No
<b>0.22</b>	Yes	Yes	Yes	Yes	No	No	Yes	No
0.342	Yes	Yes	Yes	Yes	No	No	No	Yes
0.718	Yes	Yes	Yes	No	No	No	No	Yes
<b>0.259</b>	Yes	Yes	Yes	Yes	No	No	No	Yes

#### V. RESULTS

BSA and 3-methylindole show promising fluorescence. Reference Conclusion for further information.

#### VI. CONCLUSIONS

In summary, our photodiode reading with BSA was about 2.8x higher than the reading with water. The 3-methylindole was 3.3x higher than water. Hemoglobin did not work very well, but we did not verify the concentration. We plan to rerun these tests and add control tests for the reagents associated with BSA and 3-methylindole, which is PBS and alcohol respectively. NOTE: Voltage reading at 5 V means the photodiode was flooded and an accurate result cannot be determined.