Additional Validation

This document contains some validation that didn't make its way into the report. It includes power source output values and motor ranges.

One issue is that the 5V output of the battery charger output falls if it's charging the battery. If it has a battery connected it outputs 5V, if it's just a charge input it outputs 5.1V, but if both are connected it falls significantly. If the charger is a USB input from the wall it reaches around 4.2V, while if it's a 150mA solar charger or DC power supply it outputs 3.5V, which is less than the battery voltage. This is a strange design flaw in the charger chip, especially since the manufacturer promises that it's okay to connect a load while charging. It also wasn't caught early, and if it was then a separate boost converter would've been used.

System Requirements	**Specification**	**Actual**	**Form of measurement**	**Progress**
Boot to Communication Time	10 seconds	5 sec	Timer	Complete
Rotation Range	120 degrees	160 degrees	Observation	Complete
Lift Range	frame height	frame height	Observation	Complete
Full Rotation Duration	< 20 sec	9 sec	Timer	Complete
Full Lift Duration	< 20 sec	15 sec	Timer	Complete
Limit Switch Feedback	100% reliable	100% reliable	Repeated Testing	Complete
Battery Supply under Load	> 4.8 V	4.85 V	Voltmeter	Complete
12V Supply under Load	> 11 V	12.32V	Voltmeter	Complete
Charger Current Supply (>4.8V)	> 250 mA	350 mA	Voltmeter, resistors	Complete
Battery Supply While Charging	> 4.8 V	3.5V-4.2V, depending on charger power	Voltmeter	Incomplete