



BRIGHAM YOUNG UNIVERSITY
AUVSI CAPSTONE TEAM (TEAM 45)

Airframe Subsystem Requirements Matrix

ID	Rev.	Date	Description	Author	Checked By
AF-001	0.1	10-23-18	Initial Draft	Tyler Critchfield & Ryan Anderson	Derek Knowles
AF-001	0.2	11-06-18	Revisions for Final Submis- sion	Tyler Critchfield	Ryan Anderson & Kameron Eves

Airframe Subsystem Requirements Matrix

Product: UAS Subsystem: Airframe							
Market Requirements	1	2	3	4	5	6	7
1	Capable of flight for extended period of time	2	Capable of traveling an extended distance	3	Minimize flight path deviation	4	Components are protected
5	Complies with AMA safety code	6	Capable of carrying UGV and water bottle	7	Fast and cheap rebuild	8	Looks decent
Importance	Upper Acceptable	Ideal	Lower Acceptable	1	2	3	4
1	N/A	75	40				
2	N/A	20	5				
3	1	1	0.2				
4	50	4	0				
5	30	15	10				
6	20	10	N/A				
7	-0.01	-0.05	-0.1				
8	0.2	0.1	0				
9	0.15	0.1	0.05				
10	0	-0.1	-0.15				
11	0	0	0				
12	0	0	0				
13	0	0	0				
14	1	0.5	0.4				
15	12000	10000	8000				
16	4	0	0				
17	10	10	5				
18	10	10	5				
Performance Measures	Units						
Battery life	Minutes						
Lift-to-drag ratio	Unitless						
Motor/prop efficiency	Unitless						
Airframe weight	Kilograms						
Average flight speed	Meters/second						
Stall speed	Meters/second						
Spiral stability eigenvalue	Unitless						
Static margin	Unitless						
Cn,beta (yaw)	Unitless						
Cl,beta (roll)	Unitless						
Number of components that fall off the plane	Unitless						
Number of damaged components on landing	Unitless						
Number of AMA safety code violations	Unitless						
Lift coefficient	Unitless						
Storage volume	Cubic centimeters						
Time to rebuild	Hours						
Focus group ease of repair	1-10 scale						
Focus group coolness rating	1-10 scale						

Figure 1: Airframe subsystem requirements matrix. Note that sometimes ideal values are unrealistic; rather, they are ideal. E.g., the ideal required build time is not time at all. Realism will be incorporated into target values in a future version of the Requirements Matrix.