Brigham Young University

AUVSI Capstone Team (Team 45)

Airframe Subsystem Requirements Matrix

ID	Rev.	Date	Description	Author	Checked By
RM-002	0.1	10-23-18	Initial Draft	Tyler Critchfield & Ryan Anderson	Derek Knowles
RM-002	0.2	11-06-18	Revisions for Final Submission	Tyler Critchfield	[CHECKED BY]

Upper Acceptable	Ideal	Lower Acceptable
120	75	40
N/A	20	5
1	1	0.2
50	4	0
30	15	10
20	10	N/A
-0.01	-0.05	-0.1
0.2	0.1	0
0.15	0.1	0.05
0	-0.1	-0.15
0	0	0
0	0	0
0	0	0
1	0.5	0.4
12000	10000	8000
60	0	0
10	10	5
10	10	5

Product: UAS Subsystem: Airframe																		
	Market Requirements	**Importance**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Capable of flight for extended period of time	9	●	●	●															
2	Capable of traveling an extended distance	9	●	●	●		●													
3	Minimize flight path deviation	9							●	●	●	●								
4	Components are protected	9											●	●						
5	Complies with AMA safety code	9													●					
6	Capable of carrying UGV and water bottle	3		●	●	●	●	●								●	●			
7	Fast and cheap assembly/rebuild	3												●				●	●	
8	Looks decent	1																		●

Performance Measures	**Units**
Battery life	Minutes
Lift-to-Drag ratio	Unitless
Total 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 lost	Unitless
Number of damaged components on landing	Unitless
Number of AMA safety code violations	Unitless
Lift coefficient	Unitless
Storage volume	Cubic centimeters
Time to assemble from scratch	Minutes
Focus group ease of repair	1-10 Scale
Focus group coolness rating	1-10 Scale

Figure 1: Airframe subsystem requirements matrix.