2nd Design Iteration Team Name: التُريّا

| Wing Information | | | |
|------------------|-----------|--|--|
| Airfoil | NACA 6415 | | |
| Span | 13 | | |
| Root Chord | 2 | | |
| Tip Chord | 2 | | |
| Offset | 0 | | |
| AR | 6.5 | | |
| S_{w} | 2600 | | |
| Incidence Angle | 0 | | |
| Twist | 0 | | |
| Dihedral | 0 | | |

| Vertical Tail Information | | |
|-------------------------------|-----------|--|
| Airfoil | NACA 0009 | |
| Semi Span (Total Length) | 1.65 | |
| Root Chord | 1.3 | |
| Tip Chord | 1.3 | |
| Offset | 0 | |
| S_{v}/S_{w} | 0.077 | |
| AR_{ν} | 5 | |
| V_{ν} | 0.06 | |
| Incidence Angle | 0 | |
| Tail Arm | 4.4 | |
| Shifted Length in Z-Direction | 1 | |

| Horizontal Tail Information | | |
|-------------------------------|-----------|--|
| Airfoil | NACA 0009 | |
| Span | 5.2 | |
| Root Chord | 1.3 | |
| Tip Chord | 1.3 | |
| Offset | 0 | |
| S_H/S_w | 0.35 | |
| AR_H | 4 | |
| $V_{\scriptscriptstyle H}$ | 0.06 | |
| Incidence Angle | -3 | |
| Tail Arm | 4.4 | |
| Shifted Length in Z-Direction | 1 | |

Propulsion System Information

| Input | | | | | |
|--|--------------------|------------------|------------------------------|---------------------------|----------------------|
| Model Weight (Drive included or without) | 800g without drive | | | | |
| Desired Flight speed | 6.5 km/h | | | | |
| Brushless Motor | Manufac turer | Model | Voltage Constan t [KV] | No Load Current [A] | Resistanc e [ohm] |
| | ElectriFl y | RimFir e 0.15 | 1200 | 1.7 | 0.0415 |
| Battery | Manufac turer | No. Of Cells | Voltage | Capacity [mAh] | C-Rating |
| | HRB | 3 | 11.1 | 5200 | 50 |
| Propeller Size (Diameter x Pitch) | | | 10 x 4.7 | in. | |
| Speed Controller (Current Rating Value) | 60A | | | | |

| Output | |
|--|----------|
| Load | 6.7 C |
| Mixed flight Time | 13.2 min |
| Max. Current | 33.43 A |
| Max. Power | 383.4 W |
| Static Thrust | 1618 g |
| Available Thrust [at the desired flight speed] | 1562 g |
| Drive Weight | 636 g |
| All Up Weight | 1436 g |
| (Power/Weight) Ratio [Watt/lb] | 124 W/lb |
| (Thrust/Weight) Ratio | 1.13 |

Flight Phases

| Phase 1 (payload isn't deployed) | | |
|----------------------------------|--------|--|
| MTOW | 5 | |
| X_{CG} | 0.6 | |
| Static margin (%) | 0.2 | |
| CL_{Cruise} | 1.5471 | |
| $V_{\it Stall}$ | 50 | |
| V _{Cruise} | 235 | |
| $lpha_{\mathit{Trim}}$ | 2 | |
| Required Static Thrust | | |
| Required Dynamic Thrust (at | | |
| V_{Cruise}) | | |

| Phase 2 (payload is deployed) | | |
|-------------------------------|--------|--|
| Mass | 3.8 | |
| X_{CG} | 0.6 | |
| Static margin (%) | 0.2 | |
| CL_{Cruise} | 1.5471 | |
| $V_{\it Stall}$ | 50 | |
| $V_{\it Cruise}$ | 204 | |
| $lpha_{\mathit{Trim}}$ | 2 | |
| Required Static Thrust | | |
| Required Dynamic Thrust (at | | |
| V _{Cruise}) | | |

➤ Note: lengths should be in (cm), angles in (deg).