RBS	Requirement	Rationale	Trac	Verification	Verification Details
1	The Hexacopter shall have a thrust-to-weight ratio greater than 2:1 at maximum takeoff weight	Need at least 1:1 to hover, and greater than that to maneuver. Because this hexacopter is not for high speed or heavily maneuverable applications it does not have to be very high (eg. 3:1) but having more potential thrust is a plus		Analysis	
2	Must be able to carry multiple different payloads without permanent modification to air frame	Modular payload capability enables flexibility and reuse of the platform in the future		Demonstration	
2.1	The hexacopter shall be able to support payloads up to 3.0 Kg	Gives ample headroom for a variety of potential payloads	2	Test	Flight test with dummy load of water
2.2	All payloads shall include independent PSU's	Reduces complexity, compartmentalization further support modularity	2	Inspection	
3	The Hexacopter shall achieve a minimum nominal flight time of 30 minutes without payload			Test	Flight test without load
3.1	The minimum flight time requirement shall be met without discharging the battery beyond 80% depth of discharge	Limiting battery discharge preserves battery health and gives ample time for drone to return and land post mission	3	Analysis	
3.2	The Hexacopter shall maintain controlled flight in steady winds up to 8 m/s during nominal operations		3	Analysis	
3.3	The minimum flight time requirement shall be met under nominal mission operations, including climb, cruise, maneuvering, and descent	Ensures endurance metric is realistic and not just idealized number during hovering	3	Test	
4	The Hexacopter shall support both manual and autonomous control	Ability for both control methods provides flexibility for testing as well as safety in redundancy		Test	Flight test upon build completion
4.1	The autonomous control shall support waypoint based navigation		4	Test	Flight test upon build completion
4.2	The autonomous control shall support a return to home feature		4	Test	Flight test upon build completion
5	The Hexacopter shall maintain safe operation following loss of a single propulsion unit	This requirement leverages the inherent redundancy of hexacopters		Test	Flight test with simulated motor failure
5.1	Shall sustain controlled flight in the case of a single motor failure	Validates parent requirement	5	Test	Flight test with simulated motor failure
5.2	Shall perform safe landing in the case of a single motor failure	Validates parent requirement	5	Test	Flight test with simulated motor failure
6	The hexacopter shall support GPS navigation	GPS navigation enables the autonomous flight mode, tracking and mission repeatability, all necessary for qualification and good data		Inspection	Simple test of gps and flight controler systems to determine if functional
6.1	The on-board GPS receiver shall provide positional accuracy of ±2 meters under nominal operating conditions		6	Test	