

FMEA									
Item	Function	Potential failure	Potential effects of failure	Severity	Potential causes of failure	Occurrence	Current controls for prevention/detection	Detectence	RPN
Motor	Drives the propeller	Bearing/short circuit/lose magnet	Copter crashes	8	Over current, bad maintance	2	Regular checkups before start	8	128
Motor	Drives the propeller	External damage	Copter crashes	8	Lose rocks, impacts	6	NONE	10	480
ESC	Power to motor	Component failure	Copter crashes	7	Bad component, over current	2	NONE	10	140
Flightcontroller	Flight management unit	Lost connection with reciever	Uncontrollable copter	5	Software problem, connector/cable problem	4	Checks connection regularly	1	20
Flightcontroller	Flight management unit	Lost communication with sensors	No collision avoidance (only manual control)	5	Software problem, connector/cable problem	4	Checks connection regularly	1	20
Flightcontroller	Flight management unit	Lost communication with MCU	Loss of data to server from IR and Sonar, loss of laserscanner data to controller	2	Cable problem, software problem	4	Checks connection regularly	1	8
ESC	Power to motor	Lost communication with Flightcontroller	Copter crashes	7	Connector problem, software	2	Test of communication at startup	6	84
Battery	Supplies power to the copter	Battery empty	Copter crashes	8	Too long flight, not charged before takeoff	4	Battery monitoring.	1	32
Laserscanner	Mapping of environment	Lost connection with Laserscanner	Loss of some data	2	Broken slip ring, bad connection	4	Checks connection regularly	1	8
Sonar	Collision avoidance	Bad data	Unreliable collision avoidance	6	Echo, disturbances, hardware fault	5	Unreasonable data	5	150
IMU	Position of copter for mapping	Lost connection with MCU	Loss of some data	2	Software problem, connector/cable problem	3	Checks connection regularly	1	6
MCU	Main Controlling Unit	Stops working	Loss of collision avoidance	7	Software problem, hardware problem	3	Checks connection regularly	6	126
UWB Radio	Wireless communication	Lost connection with reciever	Loss of some data	2	Software problem, hardware problem	4	Checks connection regularly	2	16
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Scale	Severity	Occurrence	Detectence						
	1 Effect on data	Never happens	Will always detect						
	2 Loss of some data	Will almost never happen	-----						
	3 Loss of all data	-----	-----						
	4 Componont failure without crashin	Can happen	Should detect						
	5 Loss of manual control	-----	-----						
	6 Unreliable collision avoidance	Likely to happen	Can be detected						
	7 Loss of collision avoidance	-----	-----						
	8 Crash with recoverable copter	-----	-----						
	9 Total crash, loss of copter.	-----	-----						
	10 Personal injury	Happens every flight	Wont detect						