

Component	Functional Purpose	Failure Mode	Failure Effect	Failure Cause	Previous Situation				Assigned Action	Improved Situation			
					S	L	D	RPN		S	L	D	RPN
RC Transmitter	Communicate Commands from the RC Pilot to the RC Reciver	Hardware Failure*	Aircraft Loiters	Poorly Connected Electrical Joint	8	2	7	112		8	2	3	48
		Transmits incorrect data	Crash	Settings Incorrect	9	2	6	108	FFCL**	9	1	4	36
		Loss of Connection	Aircraft Loiters	Settings Incorrect	8	6	8	384	FFCL	8	4	3	96
				Interference	8	4	9	288	FFCL	8	4	3	96
				Transmittor Battery Dead	8	6	3	144	FFCL	8	4	2	64
Airspeed Sensor	Measure Va	Software Failure	Flight Less Smooth	Internal Code	4	1	10	40		4	1	10	40
		Inaccurate Readings	Flight Less Smooth	Plugged Pito Tube	4	4	5	80		4	4	5	80
				High Angle of Attack	4	4	2	32		4	4	2	32
				Incorrect Mounting	4	2	2	16		4	2	2	16
		Hardware Failure	Flight Less Smooth	Poorly Connected Electrical Joint	4	1	7	28		4	1	7	28
GPS	Measure global position	Software Failure	Crash	Internal Code	9	3	10	270	Extensive testing**	9	3	3	81
		Inaccurate Readings	Crash	Interference	9	4	5	180	FFCL	9	2	4	72
		Hardware Failure	Manual Landing	Poorly Connected Electrical Joint	6	1	7	42		6	1	7	42
Battery	Provide current to all systems in the air	Loss of Power	Crash	Battery Not Charged Correctly	9	5	3	135	FFCL	9	5	2	90
				Chemical Misshap	10	2	3	60	Assign safety officer	10	1	2	20
				Battery Degridation	9	1	1	9	FFCL	9	1	1	9
Motors	Rotate Props	Overheat	Fire and Crash	Overstressing the Motors	10	3	5	150	Add warning to FFCL	10	2	5	100
		Does Not Transmit Tourque	Glide to Landing	Props Unsecured	7	8	3	168	FFCL	7	5	2	70
		Rotates the Wrong Way	Mission Does Not Start	Wires Connected Backwards	6	3	2	36	FFCL	6	1	2	12
		Hardware Failure	Glide to Landing	Poorly Connected Electrical Joint	7	1	7	49		7	1	7	49
Wiring	Transmit power and signals	Does Not Transmit Electricity	Crash	Wires Connected to Incorect Ports	9	7	8	504	FFCL	9	3	3	81
			Crash	Electrical Short Circuit	9	3	8	216	Shrink wrap all wires	9	1	8	72
			Crash	Electrical Open Circuit	9	8	5	360	FFCL	9	8	1	72
Airframe Body	Contain components, provide lift, provide stability, & respond to control inputs	Flight Characteristics Change	Crash	Icing	9	2	1	18	Only fly in good weather	9	1	1	9
				Components Move	9	5	5	225	Strap down components	9	3	3	81
		Parts Break Off	Crash	Flight Envelop Exceeded	9	2	3	54	Train saftey pilot	9	2	2	36
				Poor Manufacturing	9	6	7	378	Extensive testing	9	6	2	108
				Part poorly attached	9	2	7	126	FFCL	9	2	3	54
				Unidentified Flying Object Impact	9	1	3	27	Train saftey pilot	9	1	3	27
WIFI Light Beam	Transmit data between WIFI router and the WIFI reciver	Loss of Connection	Manual Landing	Interference	6	8	7	336	FFCL	6	3	6	108
				Antenna Not Pointed Correctly	6	10	3	180	Assign antenna pointer	6	3	3	54
		Hardware Failure	Manual Landing	Poorly Connected Electrical Joint	6	1	7	42		6	1	7	42
		Software Failure	Manual Landing	Internal Code	6	1	10	60		6	1	10	60
Human Operators	Give high level commands & ensure saftey of flight	Sick	Mission Does Not Start	Bacteria or Viruses	5	4	3	60		5	4	3	60
		Can Not Attend	Mission Does Not Start	Other Plans	5	1	1	5		5	1	1	5
		Sends Incorrect Commands	Crash	Poor Judgement	9	2	9	162	Extensive practice	9	1	9	81
			Crash	Poor Understanding of System	9	2	5	90	Extensive practice	9	1	5	45

\* "Hardware Failure" refers only to electrical hardware (e.g. USB port breaks)

\*\* FFCL is the Field Flight Checklist to which we add items to test and do before flight

\*\*\* Extensive testing before use refers to extensive flight tests before the competition.  
We currently perform flight tests a couple times a week.

S: Severity of failure effect

L: Likelihood of failure occurring

D: Dectability of cause before failure occurs

RPN: Risk Priority number (S\*L\*D)