

Risk Assessment								
P11552 - DLP System								
ID	Risk Item	Effect	Cause	Likelihood	Severity	Importance	Action to Minimize Risk	Owner
R1	Team deliverables schedule unclear	Schedule delay	Poor Planning	1	3	3	Creation of Team AIDs (Actions,Issues,Decisions) Log	ISE
R2	DLP unit fails to provide sufficient light power	Uncured resin, inaccurate part	Damaged Optics	1	3	3	Read DLP instruction/operation manual before use	ME
			Damaged Light Source	1	3	3	Read DLP instruction/operation manual before use	ME
			Flawed Calculations/Assumptions	2	1	2	Verify resin curing calculations with guide	ME
R3	Desired design not within budget	Costly Design	Overdesigned	1	1	1	Verify proposed design and additional cost with guide	ISE
R4	Parts for final assembly arrive late	Schedule delay	Long lead components not identified	2	2	4	Identify long lead components and order in advance	TEAM
			Unreliable vendor/source	2	2	4	Work with vendor to ensure delivery schedule is met	TEAM
R5	Motors fail to stop at desired position	Hardware failure	Poor control algorithm	2	3	6	Simulate control laws prior to issuing commands to hardware	ME/CE
			Failed sensors	1	3	3	Choose robust sensors	ME
R6	Component timing is out of sync	Hardware failure/incorrect model	Timing control is incorrect	2	2	4	Simulate control laws prior to issuing commands to hardware	ME/CE
			Component failure	2	2	4	Create stops in the control architecture if one component shows sign of failure.	CE
R7	DLP chip burns out	Projector becomes inoperational	Over work DLP chip	1	3	3	Ensure projector is well ventilated. Auto-stop when projector reaches dangerous heat level.	ME
			Command more light intensity that can be handled by the chip	1	3	3	Research light intensity capacity of DLP chip	ME
R8	Resin supply runs out before prototype is complete	Prototype cannot be completed	Not enough resin was allotted for part	2	2	4	Perform a volume calculation of prototype and account for excess resin in process. Include a factor of safety	ME
R9	Resin clogs during application	Prototype cannot be completed	Resin partly cures at storage opening causing a blockage of flow	2	2	4	Protect application process from light	ME
R10	Bubbles form in resin just before curing	Prototype has porous features	Air is introduced in the application process	1	2	2	Keep flow undisturbed and steady when applying resin.	ME
R11	Prototype never adheres to build platform	Prototype cannot be completed	Features on the build platform don't allow for construction	1	2	2	Inherent a high surface area structure from benchmarking to accommodate additive building.	ISE
R12	Image is out of focus	Prototype is inaccurate	Focal distance is incorrect on projector lens	3	1	3	Test focus prior to running device.	ISE
R13	Light leaks into device from outside	Cure time and accuracy are compromised	Improper enclosure	3	1	3	Use materials that are impervious to light and make sure all interfaces of the enclosure are light tight	ISE
R14	Resin sits unevenly with respect to cure platform	Prototype will not be cured properly	Device is out of level	2	1	2	Install leveling legs on device	ME
R15	Dark spots on projected image occur when they are not desired	Prototype is inaccurate	Dirty projector lens	2	1	2	Inspect lens prior to use and use a photo grade cloth for cleaning the lens to protect film on lens	ME
			Improperly programmed image	2	1	2		CE
R16	Software crash	Prototype is unfinished	Underlying problems with the native computer.	3	3	9	Make sure computer meets system requirements of software, is clean of viruses, and running smoothly	CE
R17	Component communication failure	Prototype is unfinished, possible hardware failure	Physical break of signal lines	1	3	3	Inspect all signal lines	CE
			Failed Microprocessor	1	3	3	Start design with a new microprocessor	CE
			Loss of power	1	3	3	Ensure power is securely connected	CE
R18	Cure platform not clean	Prototype will be inaccurate	Residual resin present after previous cure cycle	2	1	2	Use a wiper style blade to clean off cure platform after each cure cycle.	ME
R19	Customer needs change	Design change to accommodate	Change of scope	1	3	3	Keep steady communication with customer	ISE
R20	Cured layer adheres to resin cure platform	Prototype is unfinished, Possible hardware damage	Interface between cure platform and resin layer is conducive to adhesion	2	3	6	Thorough testing of cure platform surface with various resins, auto-stop if model platform z-directional movement required movement	ME