TEAM 45 PROJECT 3 DESIGN SPECIFICATIONS

Customer Need	Technical Need	Technical Requirement	Target Value	Current Performance
TASK 1: MOBILITY IN OBSTACLE-FREE AREA				
Move quickly	Time to travel 1 foot in a straight line	Travels 1 foot in < 1 second	Travels 1 foot in < 0.5 seconds	
Move to desired location	Stop at specified distance from specified point	Marker < 2 inches from point	Marker < 0.5 inches from point	
TASK 2: NAVIGATE USING GPS SIGNAL/ SURROUNDING OBSTACLES				
Use GPS signal to find the correct location	The ALV stops within a small distance of given location	Distance < 3 inches	Distance < 1 inch	
Navigate around surrounding obstacles	Distance from edge of obstacle to edge of ALV while maneuvering around obstacle	Distance < 5 inches	Distance < 2 inches	
TASK 3: ABILITY TO TRAVERSE SMALL OBSTACLES				
Bypass/overcome small hazards	Height of obstacle AVL able to bypass	Able to bypass obstacles of height > 10 mm	Able to bypass obstacles of height > 20 mm	

Move quickly to bypass hazards	Time to travel 1 foot while bypassing obstacle with maximum height 10 mm	Travels 1 foot < 2 seconds	Travels 1 foot < 1 second	
TASK 4: LOCATE BEACON AND STOP AT IT				
Locate beacon position	Time to locate beacon after arriving within a 0.5 meter radius of the beacon	Time < 3 seconds	Time < 1 second	
Stop at beacon	Distance from the center of where antenna would be placed to the center of the beacon	Distance < 1 foot	Distance < 6 inches	
Make known that a beacon location has been identified	Time to beep after correctly identifying a beacon	Time < 1 second	Time < 0.5 seconds	
TASK 5: TRANSPORT AND DROP ANTENNA IN PROPER ORIENTATION				
Can carry multiple antenna	Distance can walk fully loaded	Can walk at least 10 feet with 600 grams loaded onto the robot without falling over	Can walk at least 20 feet with 800 grams loaded onto the robot without falling over	

Can drop antenna in proper orientation	Distance from a drop off point to the closest part of the box to drop off location	Can drop antenna off 0 inches away from the drop off point	Can drop antenna off 0 inches away from the drop off point	
Can disengage	Distance the robot can move away from a drop off point after unloading an antenna package within 30 seconds	Can move 2 cm away from the antenna after unloading it	Can move 3 cm away from the antenna after unloading it	
TASK 6: UTILIZE GPS TRACKING SOFTWARE				
Can display its current coordinates	Distance from where the robot is to where it thinks it is	Distance is less than 10 cm	Distance is less than 5 cm	
Can recognize invalid coordinates	Time to recognize invalid coordinates	Time < 10 seconds	Time < 5 seconds	
Can determine its direction	Difference in degrees of where the robot is facing versus where it thinks it is facing	Degree difference is less than 30 degrees	Degree difference is less than 10 degrees	