Threshold Distance: Code-to-Truth Conversion Table

Test no.	Code Threshold Distance / m	True Threshold Distance / m	Raw Increment / m	Percentage Increment / %

Threshold Forward Cone Angle Range: Code-to-Truth Conversion Table

Test no.	Code Threshold Angle range / °	True Threshold Angle range / °	Raw Increment / ^{0}	Percentage Increment / %

Test Cases

This document outlines the test cases for evaluating the performance and reliability of the "Follow Me" function implemented using UWB triangulation. The robot uses three UWB tags to estimate the user's position and heading relative to itself and generates motion commands accordingly.

Vision60 x UWB - Follow Me Test Cases					
Case no.	Environment	Description	Requirement	Expected Behaviour	Result
1)	Flat indoor ground	User walks directly forward past the threshold distance = TD	Distance threshold	Robot moves forward only when the user is beyond the distance threshold =TD	
2)	Flat indoor ground	The user stands before the threshold distance = TD and leans slightly forward/backwards	Distance deadzone threshold	The robot does not move, avoids x-oscillation	
3)	Flat indoor ground	User walks in an arc from right (0°→90°→180°)	Heading threshold	Robot starts turning right as heading > Right threshold angle = RTA	
4)	Flat indoor ground	The user stands before threshold distance = TD in front (0°)	Stability in hold	The robot holds position without motion	
5)	Flat indoor ground	The user slowly moves across the turn zone to the forward zone	Forward cone test	Robot moves forward only in the forward cone = FC And turns outside the cone	
6)	Rough, Asphalt	User walks past	Robustness	Follow action still	

	Ground	threshold distance = TD in forward cone = FC	to terrain	generated reliably	
7)	Narrow corridor	User walks past threshold distance = TD	Straightness of path	Reliability in narrow pathway conditions, does not turn and make off-path movements drastically	
8)	Curbs at curb height = CH	The robot follows the user over the curb	Navigation continuity	Robot continues following without getting stuck/stopping	
9)	Obstacle in front	User walks past threshold distance = TD in forward cone = FC	Obstacle test	The robot does not collide and goes to hold	
10)	UWB reports user before threshold distance = TD, behind	The user behind the dog, to hold	Rear response test	The robot turns in the direction of user's presence in the corresponding sector	
11)	UWB reports user past threshold distance = TD, behind	The user behind the dog, to follow	Rear response test	The robot turns in the direction of user's presence in the corresponding sector, and then proceeds to walk forward	
12)	Robot on hold, to move forward	User runs past threshold distance = TD fast	Follow the re-acquire test	The robot moves forward continuously	
13)	Robot on hold, to turn, then move forward	User runs past threshold distance = TD fast, on the side of the robot for angle > RTA and for angle > LTA	Follow re-acquire test	The robot turns to face, then moves forward continuously	
14)	The robot is	UWB gives a	Noise	The robot avoids	

	near a wall	noisy bounce	rejection	sudden turns/movements, and the proper required action is given	
15)	Robot bootup	No UWB data	Safety on start	The robot does not move until all distances are valid, and the UWB mode is initialised	
16)	Large area	UWB Anchor Out of Range	Safety on connection loss	Robot holds	
17)	Flat Ground	Sudden loss of one UWB signal (simulate unplugging)	Signal loss handling	Robot holds; avoids erratic behaviour	
18)	Indoor, tight space	The user quickly rotates around the robot in a full circle	Heading continuity	Robot updates heading reliably without erratic motion	
19)	Flat ground	The user walks in a zigzag pattern (changes heading constantly)	Path tracking accuracy	The robot follows the updated heading without confusion	
20)	Flat Ground	2 UWB systems operating at once	Addressing and system independence	Both dogs follow their respective users without interference	