Test Case ID	Drone Swarm Requirement ID	Test Case Description	Test Environment	Test Steps	Expected Test Result	Actual Test Result	V&V Method	Reviewer	Execution Date	Status	Evidence ID	Comments
TC-SW01	SW-01	Verify that when a task can be performed by multiple agents, the agent that has the optimal (closed one with the higest budget) available capacity is selected.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Press Start Search button.	The task is assigned to the agent that meets the requirement and has the highest available capacity within range.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-03	
TC-SW02	SW-02	Verify the system's error handling when an agent's tasks cannot be allocated.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Navigate to the Injection Agent Fault display. 6. Chose the desired drone to be degreded. 7. In Health Code chose nr 6- MOTOR_FAILURE. 8. Press Inject Fault button.	The system detects that the agent is not performing the task, so it is assigned to the another agent.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-03	
TC-SW03.1	SW-03	Verify that the agent is prioritizing down to a defined "less critical" task	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Navigate to the Injection Agent Fault display. 6. Chose the desired drone to be degreded. 7. In Health Code chose nr 3- SENSOR_FAILURE. 8. Press Inject Fault button.	The agent will become a Communcation relay.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-04	
TC-SW03.2	SW-03	Verify proper handling when demotion renders the agent incapable of performing any task, including the less critical one.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Navigate to the Injection Agent Fault display. 6. Chose the desired drone to be degreded. 7. In Health Code chose nr 6- MOTOR_FAILURE. 8. Press Inject Fault button.	It shall emergeny land.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-05	
TC-SW04	SW-04	Verify that the system can handle one Byzantine fault, when one agent give one incorrect data to one agent.	UPPAAL	1. Send a error meassage	It will be able to handle one Byzantine fault.	As Expected	Model checking	E.Z	2025-11-05	Pass	E-06, E-07	
TC-SW05.1	SW-05	Verify that the swarm reaches a unanimous consensus for a new task.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Press Start Search.	All agents receive information about the new task and process the information and participate in the consensus protocol.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-08	
TC-SW05.2	SW-05	Verify that the swarm reaches a unanimous consensus when abort mission occurs.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Press Start Search. 5. Press Abort mission.	All agents receives the information and abort the mission.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-09, E-10	
TC-SW06.1	SW-06	Verify that a swarm of N agents can partition a defined search region.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Press Start Search.	Each agent gets their own area (without overlap).	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-11	
TC-SW06.2	SW-06	Verify that the swarm can successfully reconfigure the area division after an agent is lost.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Crash one drone.	The swarm starts redistributing the area. The lost area is divided between the remaining agents.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-12	
TC-SW07.1	SW-07	Verify that a agent is allowed to make the independent decision to abort the mission and initiate an emergency landing.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Navigate to the Injection Agent Fault display. 6. Chose the desired drone to be degreded. 7. In Health Code chose nr 6- MOTOR_FAILURE. 8. Press Inject Fault button.	The agent makes an independent assessment that continuing is unsafe and decides to abort the mission by making an emergency landing.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-13	
TC-SW07.2	SW-07	Verify that a agent is allowed to make the independent decision to abort the mission and initiate an emergency safe state.	Pybulllet	1. Chose number of agents. 2. Chose the desird grid size 3. Run simulation. 4. Start Search 5. Navigate to the Injection Agent Fault display. 6. Chose the desired drone to be degreded. 7. In Health Code chose nr 1- LOW_BATTERY. 8. Press Inject Fault button.	The agent makes an independent assessment that continuing is unsafe and decides to abort the mission by going home.	As Expected	Simulation (dynamic testning)	E.Z	2025-11-13	Pass	E-14	