Req ID	Title	Traceability	Property	Use Case	Scenarios
1	The LF (Longitudinal Flight) system shall allow the pilot to direct the aircraft according to the altitude (climb/descent).	2, 15, 30	Functional	Manage Longitudinal Flight	-
2	The system shall have a display panel to indicate flight parameters to the pilot.	3, 4	Functional	Display Parameters	-
3	The display panel shall display pitch angle, speed and altitude.	5, 9	Functional	Display Parameters	-
4	The display panel shall have 3 Alarm indicator lights: stall, crash, descent.	-	Functional	Display Parameters	DisplayParameters
5	The system shall calculate the speed, slope and altitude.	6, 7, 8	Functional	Calculate Flight Parameter	-
6	Calculation of the altitude shall be in m.	-	Non-functional	Calculate Flight Parameter	Testscenario1 & 2
7	Calculation of the speed/upwind of the aircraft shall be in m/s.	-	Non-functional	Calculate Flight Parameter	Testscenario1 & 2
8	Calculation of the slope shall be in degrees.	-	Non-functional	Calculate Flight Parameter	Testscenario1 & 2
9	The sensors shall provide the instantaneous data of static pressure P0, stop pressure Pa, landing gear extension and position of the stick to the LF control system.	10, 11, 12, 13, 14	Functional	Inputs	-
10	The pressure sensor shall take the static pressure P0 on the back of the aircraft (in Pa)	-	Functional	Input P0	Testscenario1 & 2
11	The pressure sensor shall take the stop pressure Pa in front of the aircraft (in Pa)	-	Functional	Input Pa	Testscenario1 & 2
12	The incidence sensor shall detect the incidence (in degrees).	-	Functional	Input incidence	Testscenario1 & 2
13	The landing gear sensor shall detect landing gear extension (true/false).	-	Functional	Input ldgExt	Testscenario1 & 2
14	The stick sensor shall detect the position of the stick (in degrees)	-	Functional	Input stickPos	Testscenario1 & 2
15	The system shall take the pilot's orders to control surface deflections.	16, 17	Functional	Manage Flight Controller	Testscenario1 & 2
16	Elevator servos shall controll the deflection of elevators (in m).	-	Functional	Output elevators	-
17	The positioning of the elevators shall be linear with respect to the set point of the stick.	18	Functional	Manage Flight Controller	-
18	The stick position has a range of [-15°, 15°] and the elevator deflection has a range of [-40 mm, 40 mm].	-	Non-functional	Manage Flight Controller	Testscenario 2 cycle 2-7, 73-77
19	The LF system shall allow the pilot to land and take off.	2, 15	Functional	ManageLongitudinalFlight	Testscenario1
20	The system shall ensure safe ground operation and flight within the flight envelope.	21, 24, 25, 38	Functional	Manage Longitudinal Flight	-
21	The system shall avoid excessive maneuvers.	22, 23	Functional	Manage Flight Controller	-
22	The displacement speed of the elevators shall be limited to 10 mm/second.	-	Functional	Manage Flight Controller	Testscenario1 cycle 4340-4382, 4440-4471
23	The position of the elevators must be limited between -40 mm and 40 mm	-	Functional	Manage Flight Controller	Testscenario1 cycle 4340-4382, 4440-4471
24	If the aircraft is stalled for more than 100 ms, impose a stick set point of -12°.	-	Functional	Manage Flight Controller	Testscenario1 cycle 8405-8468
25	The system shall provide flight safety information to the pilot in the fom of alarm indicator lights	26, 27, 28, 29	Functional	Drive Alarms	-
26	The stall alarm shall be triggered if incidence > 12° after a confirmation time.	-	Functional	Drive Alarms	Testscenario1 cycle 4369-4450
27	The crash alarm shall be triggered if altitude < 300 m and gear not extended after a confirmation time.	-	Functional	Drive Alarms	Testscenario1 cycle 8405-8468
28	The descent alarm shall be triggered if vertical speed > 100 m/s for after a confirmation time.	-	Functional	Drive Alarms	Testscenario1 cycle 4579-4601
29	Any activation of alarms can be done only after a confirmation time of 100 ms.	-	Non-functional	Drive Alarms	Testscenario1 cycle 4369-4450, 4579-4601, 8405-8468

#	Description		Type	Component	Test
30	The pilot can trigger the automatic pilot by pressing the "Automatic pilot" button.	31, 36, 37	Functional	Input AutoPilot	-
31	The autopilot shall manage the set point of the stick automatically in order to maintain the aircraft altitude.	32	Functional	Manage AutoPilot	-
32	When the "Automatic pilot" button is pressed, 3 operating modes according to the altitude h shall be distinguished.	33, 34, 35	Functional	Manage AutoPilot	-
33	If h < 8,000 m, then autopilot shall be in climb mode and the stick set point shall be 5°.	-	Functional	Manage AutoPilot	Testscenario1 cycle 4489-4535
34	If 8,000m ≤ h ≤ 12,000 m, then autopilot shall be in cruise mode and the stick set point shall be 0°.	-	Functional	Manage AutoPilot	Testscenario2 cycle 1, 8-68
35	If h > 12,000 m, then autopilot shall be in descent mode and the stick set point shall be -5°.	-	Functional	Manage AutoPilot	Testscenario2 cycle 69-72, 78-89
36	If the "Automatic pilot" button is not pressed, then the set point of the stick shall be equal to the position of the stick.	-	Functional	Manage AutoPilot	Testscenario1 cycle 1-4488, 4536-8919
37	The management of the automatic pilot shall be specified in the form of a finite state automaton.	-	Non-functional	Manage AutoPilot	Testscenario1 & 2
38	If the aircraft is on the ground (Pa=P0=101325), landing gear is extended and other inputs are 0 or false, then all outputs shall be 0 or false. (Ground test)	-	Functional	Manage Longitudinal Flight	Testscenario1 cycle 1-2