TRACEABILITY MATRICES

Requirements to Use cases

Requirement ID	Requirement	Use Case
R001	On/Off switch	UC1: Starting the Therapy session
R002	Check when electrodes are in contact with the skin	UC7 : Check contact with skin
R003	Three Frequency Options	UC1: Starting the Therapy session
R004	Three Waveform Options	UC1: Starting the Therapy session
R005	20, 40, 60 countdown cycles	UC1: Starting the Therapy session
R006	Treatment starts when electrodes touch skin	UC1: Starting the Therapy session
R007	0-500μa current control	UC2: Adjusting the Current
R008	30 minute auto off when not in use	UC5 : Auto sleep when not in use
R009	Battery charge indicator	UC3 : Receiving low battery alerts
R0010	Recording	UC4 : Recording a therapy session
R0011	Automatic and permanent disabling if current exceeds 700μa.	UC6 : Auto disable when current exceeds 700μa.

Use Cases to Tests

Each test continuously verifies expected versus actual state and passes if they match at every stage. Otherwise, the test fails. Debug logs are printed to the console.

Use Case ID	Use Case	Test (test name and description)
UC1	Starting the Therapy session	*Test Scenario 4 - Start Therapy.* Turns on the device, connects electrodes, then configures and starts a therapy session
UC2	Adjusting the Current	*Test Scenario 3 - Changes current intensity.* Turns on the device, verifies min and max intensity limits, then sets the intensity to 350µa.
UC3	Receiving low battery alerts	*Test Scenario 8 - Force low battery state.* Forces the battery to 6% then waits for the 5% and 2% warnings.
UC4	Recording a therapy session	*Test Scenario 6 - Test saving a therapy session.* The device connects electrodes and runs a session. Then saves the record and checks if the length of the records list has increased.
UC5	Auto sleep when not in use	*Test Scenario 7 - Test auto sleep when not in use.* Turns on the AlphaStim and waits for 30 seconds for the AlphaStim to turn off. In real life the duration would be 30 minutes, but in order to save time we opted for seconds.

UC6	Auto disable when current exceeds 700μa	*Test Scenario 9 - Simulate 700μa intensity fault.* Turns AlphaStim on, creates a fault which causes an intensity of 700μa, then the device handles the fault.
UC7	Check contact with skin	*Test Scenario 2 - Continuous circuit check.* Turns AlphaStim on, connects and disconnects the electrodes repeatedly. Observe the test circuit symbol.