

ID	Requirement	Use Case	Fulfilled By	Description	Test (TestCases.h)
0	The System has a Graphics Users Interface that the user can Interact With	N/A	MainWindow.ui	The GUI provided simulates as closely as possible the alpha_stim from the LCD screen to the button placement	N/A
1	The system can be turned off or turned on	UC1	mainwindow & CES	The User can press the power button on the GUI which will show the main screen and initialize the default values	defaultStateTest() resetToDefaultTest()
2	Therapy starts when clippers are connected.	UC1	mainwindow & CES	The user can check the earclip checkbox to simulate a connection to the ear lobe and start the therapy session	startPauseTherapyTest()
3	Continuous Circuit Check. When contact is lost for less than 5 seconds, treatment resumes.	N/A	CES	The CES class has a contactTimer, which starts if a treatment is running and the clips are disconnected. If the clips are connected again before the timer ends, the treatment resumes. Otherwise, the treatment stops.	contactTimerTest() resetToDefaultTest()
4	The user can select their frequency: 1.5, 77, 100	UC7:Set Frequency	mainwindow & CES	The user can press the frequency button to cycle through the 3 preset options. The values are stored in an enumeration. Modular arithmetic is used to cycle through the values.	freqButtonPressTest() freqUiTest()
5	The user can select their waveform: alpha, beta, gamma	UC8:Set Waveform	mainwindow & CES	The user can press the waveform button to cycle through the 3	waveButtonPressTest() waveUiTest()

				preset options. The values are stored in an enumeration. Modular arithmetic is used to cycle through the values..	
6	The user can select their therapy time: 20,40 or 60 minutes	UC2: Set Timer	mainwindow & CES	The user can press the timer button to cycle through the 3 preset options. The values are stored in an enumeration. Modular arithmetic is used to cycle through the values..	timerButtonPressTest() startTimeUiTest()
7	Clock display updates when Therapy is running	N/A	mainwindow & mainscreen	When a therapy is running, the CES class has an internal timer running. On each tick, the timer value decreases by 1, and is updated in the UI.	clockUpdateUiTest()
8	The user select their amperage from 0 to 500	UC3: Set Current	mainwindow & CES	The user can press the up/down buttons on the GUI to change the current values.The function ensures that no values lesser than 0 or greater than 500 can be set.	ampButtonPressTest() ampUiTest()
9	30 minute auto turn off	N/A	CES	The CES class has a timer called idleTimer. This timer is always running when the CES device is turned on, unless a treatment is running. When any button is pressed, idleTimer is set back into its initial value. When the timer ends, the system is turned off.	idleTimerTest()
10	Battery charge indicator. When the battery is at 5%, CES issues a warning. Turns off at	UC9: Handle Low Battery	CES	The GUI displays the current battery value. When a treatment is running, the battery value	batteryDrainTest() batteryEndTest()

	2%.			decreases by a set value, every second.	
11	User can save/load a recording with previously used settings.	UC5: Save Recording UC6: Load Recording	mainwindow, CES, recording, loggingwidget	<p>The user can press the record button to save their treatment. When the treatment is done, it is then added to a vector of recordings.</p> <p>The user can press the “recording’s log” button to view their saved recordings. When viewing recordings, the up and down buttons can now be used to traverse the list of recordings. When a recording is selected, the user can then press the “recording’s log” button again to load their values into the CES.</p>	recordingTest() recUiTest() loadRecordingTest()
12	Current check ensures the current is never over 700 microamps.	UC1: extension	CES	The current value is checked on bootUp and when the current value is changed again. If the value is over the limit of 700 microamps, the system shuts down.	ampOverloadTest() In the GUI: Debugger menu
13	Lock button functionality. When a button is pressed, all other buttons will not change settings.	UC4: Set Lock UC2,3,7,8: extensions	mainwindow & CES	<p>The user can press the lock button to prevent accidentally changing the values during treatment. Pressing this button changes isLocked, a boolean value stored in the CES class. When true, pressing any other button does not change the set values.</p>	lockUiTest() lockTest()