

ID	Requirement	Related Use Case	Fulfilled By	Test	Description
1	Press and hold the power button until the power LED turns on. The graph will display the battery level when you first turn on the unit.	Power On(UC2)	MainWindow	Hold the power button for 1 second.	When the power button is pressed, the power_pressed() function updates the mLastPressTime with the amount of time that has passed since the simulation began. When the power button is released, the power_released() function checks if the current amount of time that has passed since the simulation began minus the mLastPressTime is greater or equal to 1. If so, and the PowerStatus is set to false, the device powers on.
2	If no session is selected within two (2) minutes, the Oasis Pro will turn off.	Power Off (UC3)	MainWindow	Power on, and do not start a session for two minutes	<p>Once the device is on, the noSessionTimer begins counting down from 120. When the timer reaches 0 because the User did not begin a session, the device powers off.</p> <p>Press and hold the POWER button, release after a second or more, and the device will power on (given there is enough charge). Now, do nothing for two minutes, and the device will power off, as the inactivity timer has run its course.</p>
3	To turn off the Oasis Pro at any time, press and hold the power button until the unit shuts off.	Power Off(UC3)	MainWindow	Power on, then power off at anytime during execution	<p>Pressing and holding the power button for more than 1 second when the powerStatus is true will cause the device to power off. When the power button is pressed, the power_pressed() function updates the mLastPressTime with the amount of time that has passed since the simulation began. When the power button is released, the power_released() function checks if the current amount of time that has passed since the simulation began minus the mLastPressTime is greater or equal to 1. If so, and the powerStatus is set to true, the device powers off.</p> <p>Press and hold the POWER button, release after a second or more, and the device will power on (given there is enough charge). Now, at any time while the power is on, press and hold the POWER button, release after a second or more, and the device will power off.</p>

4	<p>All sessions end with Soft Off™.</p> <p>After Soft Off™ the unit will power off. To end a session early, press and release the power button. The graph will scroll from 8 to 1 to confirm that Soft Off™ is in progress.</p>	Power Off(UC3), Extension 1b	MainWindow	<p>Power on, begin a session, then tap the Power button OR wait for the session to end</p>	<p>Power on the device, and start a session. Now, while the session is running, quickly tap the power button, and SoftOff will begin. Alternatively, instead of ending a session early, let the time run out (modeled for minute=second), and SoftOff will begin.</p> <p>If the boolean inSession is true, and the power button is released() (is not held for longer than one second), then the softOffTimer begins, which calls softOffTimed() every second. This function highlights the rows in the connectivity display from 8-1. When the final row (showing 1) is highlighted and reached, powerStatus is set to false, the power display shows OFF, the inSession variable is set to false, and the system is considered powered off.</p> <p>Otherwise, if the sessionTimer(set to length of session) signals timeout(), then softOff is called as if the power was tapped in session. The same functionality occurs besides the tapping.</p>
5	<p>The battery level is displayed on the graph for a couple of seconds when the Oasis Pro is first turned on.</p>	Power On(UC2)	MainWindow	<p>Power on, observe battery level.</p>	<p>Press and hold the POWER button, release after a second or more, and the device will power on (given there is enough charge). Observe the flashing on the connectivity bar, indicative of battery-level. (The battery level is also displayed as a numeric value at the top for ease of confirmation for TAs.)</p> <p>When the power button is pressed it will start a timer where it will constantly be checking the battery level. On first power on state it will see that it is at 100% battery level it will then display and select all the numbers in the graph then it will call the function again deselecting them and turning the variable flashedHundo to true making sure it doesn't keep on flashing during the selection of session.</p>
	<p>The battery level is monitored and displayed periodically while the session is running.</p>	Run a Session(UC1)	MainWindow	<p>Power on, begin a session, observe flashes as battery</p>	<p>Power on the device, and start a session. Observe the flashing on the connectivity bar, indicative of battery-level as it hits certain</p>

When the battery level is getting low, the graph will display two (2) bars. When the battery level is critically low, the graph will display a single (1) blinking bar.			decreases	<p>checkpoints (battery = 66%, battery = 33%, battery < 32%). When the battery is low (below <32%), blinking begins.</p> <p>There is a loop that starts when the power is turned on and it constantly checks the battery status. Once it gets to levels of 66, 33 and lower than 33 it will select the first 5 levels, the last 2 and the last level respectively. After every state with the exception of the last one it will change a boolean check midBatteryReached and lowBatteryReached. It will select and deselect the appropriate levels in the graph. For the last status of lower than 33 it will constantly select and deselect the last option. Until the power is turned off or the battery is depleted.</p>
The Oasis Pro has three (3) standard session groups (20 minute, 45 minute, and user designed). Tap the power button to select a session length.	Run a Session(UC1)	MainWindow, Session	Power on, tap the power button to cycle through the session groups.	<p>Power on the device. Tap the power button and observe that session groups cycle one position (shown by highlight) every tap.</p> <p>If inSession is false, and powerStatus is true, if the powerButton is pressed and released in under a second, the selectedRow of the sessionGroup QListWidget is updated to be the next row down. If the bottom one is reached, it loops around by modulus of 3, so there are only every row 1, 2 or 3. When a row is selected, the value of that row (as a constant in the Session class) is loaded into the curSession Session pointer of MainWindow. If custom time is selected, then the value of the QSlider representing user input of desired time is loaded as the SG variable (the value is displayed next to the QSlider for ease of reference)</p>
The Oasis Pro has four (4) session types (Delta, Alpha, Theta, 100). Tap the UP or DOWN to select a session type.	Run a Session(UC1)	MainWindow, Session	Power on, tap the up or down buttons to select session types.	<p>Power on the device. Tap the up or down arrows and observe that session type selection moves up or down (shown by highlight), depending on which button was pressed.</p> <p>If powerStatus is true, and the upButton() or downButton() is pressed(), the sessionType QListWidget's selected row is moved up or down, depending on selection. If any bound is reached and an attempt is made to go out of bound, it is ignored. Once a new row is Selected, the value of Hertz is loaded into the currentSession</p>

					Session pointer of MainWindow.
6	At the start of each session, the Oasis Pro checks for an electrical connection by entering a test mode. The CES Mode light will blink. The graph will display the status of the connection. Once a connection has been confirmed, the session begins.	Connection Test (UC4)	MainWindow	Select a session group and type. Select Attach Earlobes Strong or Attach Earlobes Weak . The test begins by pressing the Start button.	<p>Power on the device, select earlobe strength by pressing the appropriate , select session variables (as described earlier), and start the session. Depending on which earlobe strength was selected, the connectivity graph will be lit up (8-6 if strong, 5-3 if weak), and the session will begin: notice the battery begins ticking down.</p> <p>Depending on which button is clicked, the connection strength is set to 1 or .66, and the rows of the connectivity display (sessionType_2) are selected accordingly. Once the startButton is clicked, a timer tells the CESModelight to select and deselect 8 times, simulating flashing. The relevant rows (for earlobe button selection) on sessionType_2 are again highlighted , to show the connectionStrength. The inSession variable is set to true, and the session will begin, so batteryDrain will start to take effect.</p>
	If the ear clips are disconnected, the Oasis Pro will stop the session and wait for the ear clips to be reconnected. No Connection (1 and 2 blinking) will display.	Run a Session(UC1), Extension 8d	MainWindow	Power on, and press the Detach Earlobes button, and attempt to start a session OR start a session and press the Detach Earlobes button.	<p>Power on the device, and press the Detach Earlobes button. Now, try and begin a session. The connectivity display will flash (1 and 2) to indicate there is no earlobe connection. The session will not begin.</p> <p>OR</p> <p>Power on the device, and begin a session. At any point during the session, press the Detach Earlobes button. The session will stop, the connectivity display will flash (1 and 2) to indicate there is no earlobe connection. Session will not run until the earlobes are re-connected.</p> <p>Once the detachEarlobe button is pressed, the inSession value is set to false, and the connectionStrength is set to 0.33. If startButton() is run, and the connectionStrength is 0.33, then a timer begins that will flash rows 1 and 2 of sessionType_2 to indicate there is no connection. The start button will not allow the session to start, as it must be either 0.66 or 1 to allow inSession to be set to true, allowing the session to run.</p>

					<p>If detachEarlobe is pressed while a session is running (inSession = true), then the session is stopped, and the same functionality as above is run. In order to restart the session, reconnect earlobes (choose one of the earlobe buttons) and press the startButton</p>
	<p>To increase the intensity of the stimulus, press the up button. To decrease the intensity, press the down button. The graph lights 1 to 8 only show an approximate intensity level.</p>	Run a Session (UC1), Extension 8c	Main Window, Session	<p>Start a session. Press the up or down button to change the intensity.</p>	<p>Power on the device, and start a session. Press the up or down buttons to increase or decrease the intensity. Observe that the connectivity display shows intensity at 1-8 based on presses and the rate at which the battery level changes is dependent on the current intensity (decreases quicker with larger values).</p> <p>If inSession is true, then the up or down buttons are used to select an intensity, modeled by the rows of sessionType_2. As before, if a button is pressed which would cause the rows to go out of bounds, it is ignored. Once a row is selected, its value (8 minus the current row index) is set as the intensity of the curSession Session pointer in MainWindow.</p>
7	<p>The user can save their currently selected session group and session type to the device so it can be loaded for later use.</p>	Run a Session (UC1), Extension 5a	Main Window, Session	<p>Power on, select desired group type and session type. Select a slot from Session History to save to. Select the save button. Turn off the device. Turn on the device. Select the session from the Session History. Select the Load button. Attach Earlobes and select the Start button.</p>	<p>Power on, select desired group type and session type (as described before). Select a slot from Session History to save to by choosing with mouse. Press the save button. Now, press and hold the power button to turn off the device. Power on again. Select the previously saved-to session from the Session History. Press the Load Button. Press the button to attach earlobes at desired strength and press the Start button.</p> <p>When the save session button is clicked, the curSession is loaded into the array of session pointers held by MainWindow at the appropriate location (position in the array = selected session number minus 1). When the load session button is pressed, the curSession is set to the appropriate location in the session pointer array.</p> <p>When the program starts, the loadSessions() function is called, which opens the db file and reads each line as a Session (following the record format). If the db file does not yet exist, it is created so that it may be used for storage. When the program exits, the</p>

					destructor is called, which calls the saveSessions() function. The saveSessions() function opens the db file and writes each session as a line (using getRecord()).
	Your simulation should handle battery depletion as a function of length of therapy, intensity, and connection to skin.	Run a Session (UC1)	Main Window	Power on, select a session group and session type, select the Start button. Observe the change in the number next to the Battery Level	<p>The drainBattery() function determines the amountToReduceBattery as a function of the current Hertz of the session, the connection strength, the intensity and the session group. The drainBattery() function is called once every second and decreases the batteryLevel by the amountToReduceBattery. The function then updates the MainWindow with the new batteryLevel.</p> <p>drainBattery is called every second the device is on, but only activates if inSession is true. The amount to reduce the battery by per second is modeled by:</p> $\frac{hertz}{100} * (connectionStrength + \frac{intensity}{10}) * \frac{sessionGroup}{60}$ <p>If the batteryLevel after the depletion is less than or equal to 0, then the battery is considered drained, and the device powers off.</p>