

Traceability Matrix

ID	Requirement	Related Use Case	Fulfilled By	Test	Description
1	The application interface contains buttons.	N/A	MainWindow.ui	Run the simulator in Qt to observe the ui.	Using QT's built in user interface framework, an elevator system is replicated. All buttons are clickable with the mouse.
2	The Device will power on.	Power on	MainWindow	Click the Power on button.	The MainWindow class allows the user to power on the device.
3	The Device will power off.	Power off	MainWindow	Click the Power off button.	The MainWindow class allows the user to power off the device
4	A session length is chosen.	CES Device Session	MainWindow, Session	Click on the 20 min or 45 min radio button, or the user can specify a certain duration length.	The MainWindow Class uses the session length to initialize a new session. It can do this by getting the values from the radio buttons or a custom timer with a spin input.
5	A session type is chosen	CES Device Session	MainWindow, Session	Choose one of the radio button options from the session type section of the session panel.	The MainWindow Class gets the type of session from a set of radio buttons that includes all the available types (MET, THETA, DELTA, ALPHA) that can be run. The type of session is stored in the session object.
6	The session intensity is changed	CES Device Session	MainWindow, IntensityMeters	While a session is running, change the intensity by pressing the up or down buttons.	The MainWindow class contains an intensityMeter object. When the user presses the up or down button, it changes the intensity of the intensityMeter object. Then it updates the GUI. This action should be executable even when a session is running
7	The session connection quality is changed	Check Connection	MainWindow	While a session is running, press "Excellent" or "OK" in	The MainWindow checks the quality of a connection in order to calculate battery drain. The

				the connection panel to change the connection quality.	user should be able to change connections before and during a session.
8	A test is done before a session starts	Check Connection	MainWindow	Disconnect an ear or both ears before a session starts by clicking on one or two of the checkboxes in the ear connection panel. Then press the start session button.	The MainWindow class calls a testConnection function which checks the connection before a session is started. The appropriate output is displayed after the device tests the connection
9	A session is paused when one or both ears are disconnected	Check Connection	MainWindow	While a session is running, disconnect an ear by clicking one of the checkboxes in the ear connection panel.	When a session is running, the MainWindow class calls a testConnection function which makes sure that a session has a stable connection. If it fails the test, then the session is paused and the battery stops draining.
10	A session is ended when ears are not connected after 20 seconds	Check Connection	MainWindow	While a session is running, disconnect an ear by clicking one or two of the checkboxes in the ear connection panel. Then wait 20 seconds.	When a session is running, the MainWindow class calls a testConnection function which makes sure that a session has a stable connection. If it fails the test, then the session is paused and the battery stops draining. If the connection is still disconnected after 20 seconds, the session is disconnected.
11	The appropriate label changes colors to red when an ear is disconnected	Check Connection	MainWindow	Disconnect an ear by clicking one or two of the ear disconnected checkboxes in the ear connection panel.	The testConnection function in the MainWindow class checks if each ear is connected, if they are disconnected, the connection is disconnected and the L or R label changes color to red. When the connection is reconnected, the L or R label becomes black again.
12	The battery drain is increased when connection quality is okay.	Check Connection	MainWindow	While a session is running, change the connection quality by pressing the "Okay" connection radio	The MainWindow class checks for a change in quality during each cycle of a session. Since battery drain is measured as a function of time, intensity, and

				button or the “Excellent” connection radio button.	connection to skin, the battery drain increases slightly when the connection is okay.
13	The record session checkmark box is checked and the session is ended by using the “end session” button or “power off” button.	Save Therapy Session	MainWindow, Record	While the session is running, go through the type variants as well as ranges for intensity and lengths. By checking the log file—named SaveTherapies.txt we should see this information reflected.	The record class is responsible for saving the therapy history information for the user. The CES device will save the session, type, length in minutes, and intensity; provided that the record session box is checked.
14	The battery is depleted when a session is being ran	CES Device Session	MainWindow, Battery	While a session is running, the battery percentage will go down	The MainWindow class allows the user to start a session. During the session the MainWindow class will call a battery object to decrease the battery by a set amount every second. The depletion rate is determined by the connection quality and intensity.
15	Session ends when the battery is low.	CES Device Session	MainWindow, Battery	While a session is running, the battery percentage falls below 5%	The MainWindow class allows the user to start a session. During the session the MainWindow class will call a battery object to check the battery percentage. If the battery percentage falls below 5% then the session will end immediately.
16	Session ends when the end session button is pressed	CES Device Session	MainWindow	Click the end session button	The MainWindow class allows the user to start a session. The MainWindow class also allows the user to end the session prematurely.
17	Session ends when the time limit is reached	CES Device Session	MainWindow	While a session is running, the time limit is reached	The MainWindow class allows the user to start a session. The MainWindow class checks to see if the time limit is reached. If the time limit is reached then the session will end.

18	Session starts when the start session button is pressed	CES Device Session	MainWindow,	Click the start session button	The MainWindow class will start a new session if there is sufficient battery
----	---	--------------------	-------------	--------------------------------	--