Traceability Matrix

ID	Requirement	Related Use Case	Fulfilled By	Test	Description
1	Device calculates Dominant Frequency And delivers correct treatment	Use Case 4: User Selects a New Session Setting Use Case	EegSite	Generating test, semi-realistic, waveforms in EegSite and checking a dominant frequency within range is calculated. And seeing the treatment frequencies that are delivered to the EEG site	Dominant frequency is calculated using a Fast fourier transform and power spectrum analysis. Ensuring that treatments are being delivered by seeing console messages being printed by the deliver treatment function
2	Device stores all needed session information, and is able to retrieve relative information for Device log viewing and PC log viewing	Use Case 4: User Selects a New Session Setting Use Case and Use Case 5: User Selects Session Log History Setting Use Case and Use Case 7	DbManager, Session, MainWindow	Viewing the history log on both the device and PC after running every session, to ensure it is updating, and all the information is displayed/ stored correctly. And ensuring that incomplete sessions are not stored	Db manager stores the date_time, and before and after baselines/dominants for each EEG site for each completed session. The device only shows the date and time of all sessions run PC shows all the stored information
3	Device stops running session if contact is lost	Use Case 4	MainWindow	Simulate losing contact by setting the value to false in admin section of window.	Red light should flash, blue light should be off. Session timer should pause. If contact is re-established session should continue. If it is not after 5 minutes (10 seconds for testing) end the session and do not store the session in session log.
4	Pause button pauses the session	Use Case 4	MainWindow	Press the pause button mid session and observe responses	Session timer should pause. If paused for longer than 5 minutes (10 seconds for testing) end the session and do not store the session.
5	Device turns on when power	Use Case 1: User Turns	MainWindow	Verify device transitions from Off	When the power button is clicked, the device state should transition to

	button is pressed	Device On		to On state	On if the battery level is sufficient.
6	Device turns off when power button is pressed and user confirms action	Use Case 2: User Turns Device Off (UC2)	MainWindow	Verify device transitions from On to Off state	When the power button is clicked, the device state should transition to Off, and the session should end early if in progress.
7	User navigates to the menu	Use Case 3: User Presses Menu Button	MainWindow, Menu	Verify the menu is displayed with all options	Upon pressing the menu button, the main menu screen with options for new session, session log, and date and time setting should be displayed.
8	Device allows setting the date and time	Use Case 6: User Selects a Set Date and Time Setting Use Case	MainWindow, Chrono	Verify that the device allows date and time setting	The device must allow the user to set the current date and time using the provided UI controls.
9	Green light slashes when treatment is delivered for the 1 second.	Use Case 4: User Selects a New Session Setting Use Case	MainWindow	Navigate to the New Session and watch every 5 seconds there will be a green light flash for the treatment delivery.	The new session has started and the blue light is on indicating contact.
10	Progress bar for the new session increases with the timer shown	Use Case 4: User Selects a New Session Setting Use Case	MainWindow	Navigate to the New Session and watch the progress bar match the term for the session.	The new session has started and the timer increases from 00:00 and the progress bar starts at 0% and is updated.
11	Blue light turns on for contact initiated	Use Case 4: User Selects a New Session Setting Use Case	MainWindow	At the admin view there is an apply to scalp dropdown where it can be set to true and false and the blue light will reflect that.	The device is on and the admin section has the apply to scalp dropdown set to true.
12	Red light flashes when the session is paused	Use Case 4: User Selects a New	MainWindow	Navigate to the New Session and press the pause button and watch the red light	The new session button was clicked from the MainWindow and the apply to scalp dropdown is true but the session is paused so the light

		Session Setting Use Case		flash.	flashes red.
13	Session is erased when session is paused for over **X** seconds	Use Case 4: User Selects a New Session Setting Use Case	Session, MainWindow	Begin a new session and pause it for more than **X** seconds. The user will be booted to the main menu page.	We can check the session was not stored by checking the session log and ensuring no new entries
14	Eeg waveforms are displayed	Use Case 4: User Selects a New Session Setting Use Case	MainWindow, Eegsite, Qcustomplot	User selects which waveform they wish to see (in the admin section of the ui window) and verify the waveform is displayed	Eeg waveforms are displayed using qcustomplot and are only updated when a new electrode is selected. Each waveform for each electrode should show different waveforms.
15	Session runs correctly, completing four rounds, delivering treatment 4 times and stores session info correctly	Use Case 4: User Selects a New Session Setting Use Case	MainWindow, EegSite, DbManager	Start new session and let it run to completion, verify console messages to see the delivery of treatment, and the moving between the session states. Then check session log on PC to verify all session info is stored	When running a session, you can check the waveforms change after each round to show new waveforms are read in. You can check the console messages to verify the state movements and watch timer to verify session runs correctly. After the session is complete, you can check the session log to verify the session was stored correctly.