

ID	Requirement	Related Use Case	Fulfilled By	Test	Description
1	The user interface of the system incorporates interactive elements such as buttons, a display screen, and virtual representations of EEG electrodes.	N/A	MainWindow.ui	Execute the system simulation within the Qt framework to observe the user interface.	Using the Qt framework to closely emulate the operational aspects of the EEG device. It features interactive buttons that can be controlled with a mouse click, a display area for session information, and graphical representations of EEG electrodes.
2	The battery level is dependent on the power level of therapy and how long it is being run for.	N/A	MainWindow.ui	Begin a therapy session and watch the battery symbol: as the session continues, the battery power will go down.	During a therapy session, the battery power drops steadily (how long and much power the session uses). This battery usage data is saved, and the MainWindow gets updated with this latest info.
3	Allows users to set the current date and time of procedure.	Use Case 1: Setting Up the EEG Session	MainWindow.ui	Start a treatment and adjust the corresponding time/date to be saved in history log later on.	Date and Time Qwidget, which will be adjusted by the user , which will then be saved into the history log to be displayed when asked for when the treatment is done.
4	Device displays the progress of the current procedure.	Use Case 2: EEG Session Process	MainWindow.ui	Observe the UI during a session to ensure progress indicators are accurate.	QTimer attribute, which will maintain an internal time of how long the therapy has been running. The MainWindow will display this information when a therapy is running through a progress bar and offers users real-time session progress through visual indicators
5	Supports the placement of 21 standard electrode sites.	Use Case 2: EEG Session Process	MainWindow.ui	Once powering the device, and starting procedure/treatment, all 21 electrodes will be considered well placed/working using boolean.	All 21 electrodes will be assumed to be placed correctly as explained in the use cases and will use a boolean in the code. Electrodes detect the electrical signals produced by neurons firing in the brain. The signals are

					amplified and recorded by an EEG machine, which displays the brainwave patterns as a series of wavy lines called an EEG trace
6	Analyzes EEG signals to establish a baseline frequency at each electrode site.	Use Case 2: EEG Session Process	MainWindow.ui	Test signal analysis for accuracy in calculating baseline frequencies.	Uses signal processing algorithms to determine the average dominant frequency at each site from EEG data, essential for customized treatment delivery.
7	Applies an offset frequency during treatment, recalculating and adjusting the signal at each 1/16 second interval.	Use Case 2: EEG Session Process	MainWindow.ui	Simulate treatment to confirm the dynamic adjustment of offset frequency.	Ensures the system dynamically adjusts the treatment signal based on real-time EEG data, enhancing therapeutic effectiveness.
8	Features a session management interface with options for new sessions, session logs, and time settings.	Use Case 1: Setting Up the EEG Session	MainWindow.ui	Power on device, and navigate through menu features to confirm functionality.	The interface allows easy navigation between starting new sessions, session log, and a date and time setting promoting efficient session management.
9	Automatically terminates sessions after 5 minutes of lost contact, erasing the session data.	Use Case 2: EEG Session Process	MainWindow.ui	Click the Pause button in the middle of a session and don't resume the session within the time given.	Enhances user safety and data integrity by auto-terminating sessions when contact has been lost for over 5 minutes in the middle of a session.
10	Stores and allows review of session logs within the system.	Use Case 1: Setting Up the EEG Session	MainWindow.ui	Access session logs to verify the storage and retrieval functionality.	Tracking of past sessions, and allowing users to review session dates and times through history log.
12	Data transfer to PC into history log for session analysis.	Use Case 3: Disconnecting the EEG Session	MainWindow.ui	Conduct data transfer tests, and confirm when clicking history log	Mechanism for uploading session data to a PC into the history log, allowing for analysis and progress tracking.
13	Feedback on electrode contact status during session.	Use Case 2: EEG Session Process	MainWindow.ui	Observe contact status and whether the corresponding lights are happening.	Contact initiated is indicated by the blue light on the device. If contact is lost, the red light flashes,

					the session is paused and the device starts.
14	Ability to pause and resume session	Use Case 2: EEG Session Process	MainWindow.ui	Pause a session using the handheld device, then reconnect within 5 minutes. Verify the session resumes accurately, maintaining session progress and data integrity, and battery level.	Allowing for brief interruptions without the need for session restarts, thereby preserving the originality of the session data and user experience.