ID	Requirement	Related use case	fulfilled by (in diagram)	Implemented-by(function)	tested-by
1	Media Buttons (Stop, Play, Pause) allows user to navigate the treatment	Initiating a new Session, Pausing and Resuming Session	n/a	MainWindow::on_btn_on_clicked() MainWindow::on_btn_off_clicked() MainWindow::on_btn_pauseTreatement_clicked() MainWindow::on_btn_continueTreatment_clicked() MainWindow::on_btn_stopTreatement_clicked()	Clicking the pause, play or stop buttons and seeing the timer and progress bar pause, continue, or reset (respectively).
2	The device runs an automatic program and the user simply has to start the session and the software does the rest, informing the user as to session duration and completion.	Initiating a new Session	Sequence Diagram: normal operation of treatment with Neureset device	MainWindow::on_widget_menuOpts_itemActivated(QListWidgetItem *item) NeuresetController::startNewSession(char type)	Selecting the Menu tab and then selecting 'NEW SESSION'. The timer then begins to count down and the user can view the console if they want more details about the treatment.
3	Once the session is initiated, it reads a signal from one of the 21 EEG sites on the headset.	Initiating a new Session	Sequence Diagram: normal operation of treatment with Neureset device	EEGSite::getWaveForm(char type)	During the session, data is printed to the console showing the initial signal from the EEG sites.
4	The session establishes a baseline average frequency over the period of one minute and then delivers the treatment in a single second according to the LENS protocol.	Initiating a new Session	Sequence Diagram: normal operation of treatment with Neureset device	EEGSite::calcNewBaseline(int baselineFrequency, int offsetFrequency) NeuresetController::handleTreatmentRound() EEGSite::deliverTreatment(int offsetFrequency)	During the session, the calcNewBaseline function is run for each EEG site to recalculate the baseline 16 times during the treatment. The change can be seen in console output at the end of a round (shortened from 1 minute to 15 seconds for testing purposes).

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5	It then proceeds to the next EEG site and repeats the process, establishing the baseline frequency for one minute and then applying the rapid one second treatment until all 21 sites have been activated.	Initiating a new Session	Sequence Diagram: normal operation of treatment with Neureset device	EEGSite::calcNewBaseline(int baselineFrequency, int offsetFrequency) NeuresetController::handleTreatmentRound()	Viewing console output showing all 21 sites being treated with the procedure outlined above.
6	The menu has three options: new session, session log, and a date and time setting.	Setting Date and Time, View session log, Initiating a New Session	n/a	UI	Opening the menu table.
7	Pressing the new session option opens a timer that begins once contact is initiated, indicated by the blue light on the device.	Initiating a New Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::startNewSession(char type)	Selecting ‘NEW SESSION’ and viewing the illuminated blue light.
8	If contact is lost, the red light turns on until contact is reestablished.	Pausing and Resuming a Session	Sequence Diagram: Connection loss between electrodes and the device	MainWindow::on_btn_disconnectSite_clicked() NeuresetController::disconnectSite(int eegId) EEGSite::disconnectSite() MainWindow::contactLost(bool x) MainWindow::on_btn_connectSites_clicked() NeuresetController::reconnectSites() EEGSite::reconnectSite()	Clicking ‘Disconnect EEG Site’ and viewing the illuminated red light.
9	If contact is not reestablished after 5 minutes, the session is erased.	Pausing and Resuming a Session	Sequence Diagram: Connection loss between electrodes and the device	MainWindow::on_btn_disconnectSite_clicked() NeuresetController::pauseTimer()	Select a site to disconnect then press disconnect then wait 5 seconds (shortened from 5 minutes for testing purposes).

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10	The timer shows approx. time remaining and session progress bar indicated by a percentage.	Initiating a New Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::updateTimer() NeuresetController::updatedProgressBar(int progress)	Selecting ‘NEW SESSION’ and viewing the timer count down and the progress bar fill in.
11	The user can press pause voluntarily during a session.	Pausing and Resuming a Session	Sequence Diagram: normal operation of treatment with Neureset device	MainWindow::on_btn_pauseTreatement_clicked() NeuresetController::pauseTimer()	Press pause during a session.
12	During the treatment, the green light is on indicating treatment is being delivered.	Initiating a New Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::handleTreatmentRound() MainWindow::treatmentDelivered(bool delivered)	Happens during the treatment.
13	At the beginning of a session, there is an overall baseline calculated for all 21 EEG sites, concurrently, at the same time	Initiating a New Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::startNewSession() EEGSite::calculateBaseline(int* data)	Happens during a new session.
14	At the end of the session, a baseline is once again calculated for all 21 EEG sites.	Completing a Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::handleTreatmentRound()	Happens during a new session.
15	During therapy output to console device activities such as processing input waveform, calculating dominant frequency, delivering the 1 sec feedback at 1/16 of dominant + offset, round 1 of therapy, round 2 of therapy, ..., therapy finished.	Completing a Session	Sequence Diagram: normal operation of treatment with Neureset device	NeuresetController::startNewSession() EEGSite::calculateBaseline(int* data) NeuresetController::handleTreatmentRound() EEGSite::calcNewBaseline(int baselineFrequency, int offsetFrequency)	Selecting ‘NEW SESSION’ and viewing the console output

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16	The menu also has a session log history.	Viewing session log	Sequence Diagram: therapy history viewing with PC	UI	Opening the menu table.
17	Pressing this button displays the time and date of the sessions and the user can scroll through them, although no further information is provided on the device itself.	Viewing session log	Sequence Diagram: therapy history viewing with PC	MainWindow::on_widget_menuOpts_itemActivated(QListWidgetItem *item) QString NeuresetController::sessionLog() QString NeuresetController::sessionLogToString(int session)	The session log is printed to the console when view session is pressed
18	However, the before and after baselines are recorded and can be uploaded to a PC with the date and time log information. (The baseline's show the before and after dominant average frequencies for each EEG site, taken during the overall baselines at the beginning and end of the session, compared side by side as a numerical value.)	Exporting Session Data to PC	Sequence Diagram: therapy history viewing with PC	MainWindow::on_widget_menuOpts_itemActivated(QListWidgetItem *item) MainWindow::treatmentDelivered(bool delivered) QString NeuresetController::sessionLog() QString NeuresetController::sessionLogToString(int session)	When a session is finished the data is saved to a file called SessionLog.txt. If Session Log is clicked it will save the information to the file and also print it out in the console.
19	The third menu option is simply a date and time setting.The user inputs the current date and time so the device clock can accurately track the sessions.	Setting Date and Time	Sequence Diagram: normal operation of treatment with Neureset device	MainWindow::on_widget_menuOpts_itemActivated(QListWidgetItem *item) MainWindow::enterTime&Date() MainWindow::on_btn_setDate_clicked()	Click the date and time setting option on the menu to have the option to enter a date.
20	The default date and time is the current time and date.	Setting Date and Time	n/a	NeuresetController::handleTreatmentRound()	Shown in the session logs.
21	Battery updates as the battery is drained.	Low Battery Handling	Sequence Diagram: Battery	Battery::consumePower() NeuresetController::updateBatteryPercentage() MainWindow::updateBatteryLevel(int level)	Once the device is turned on the battery begins to drain and the

ID	Requirement	Related use case	fulfilled by (in diagram)	Implemented-by(function)	tested-by
			low response of the device		percentage goes down on the battery icon.
22	The device warns the user when the battery is running low.	Low Battery Handling	Sequence Diagram: Battery low response of the device	Battery::consumePower() MainWindow::updateBatteryLevel(int level) MainWindow::handleBatteryDepleted()	When the device is running low on battery there is a warning shown.
23	Show depletion of battery at roughly 2-3 treatments fully depleting the battery.	Low Battery Handling	Sequence Diagram: Battery low response of the device	Battery::consumePower() NeuresetController::updateBatteryPercentage() MainWindow::updateBatteryLevel(int level) MainWindow::handleBatteryDepleted()	Run 2-3 sessions or wait for the battery to drain.
24	A realistic EEG waveform. EEG waveform generation and display for testing purposes	n/a	n/a	MainWindow::on_btn_seeEEGWave_clicked() NeuresetController::generateChart(int eegSite, char type)	Selecting an EEG Site and band and then pressing ‘View waveform for EEG Site’