4 channel Assessment Gathering
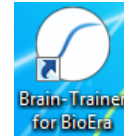## with Brain-Trainer for BioEra, Optima+ 4 and Electro-Cap

CONFIGURE SETTINGS

Power on your device

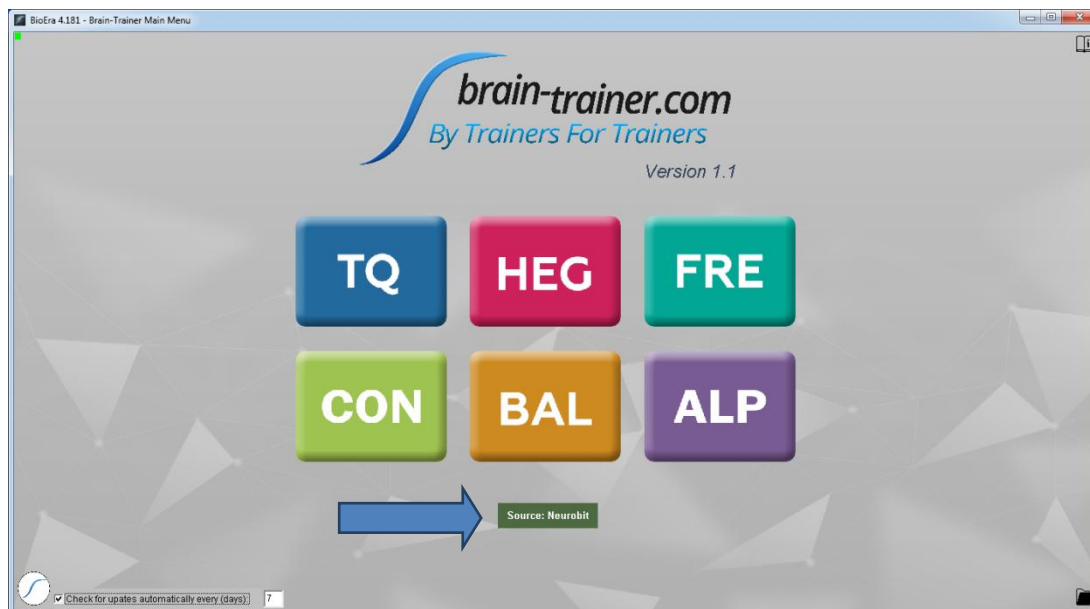Connect the Optima device in the USB port of your computer and turn it on.

Open Software

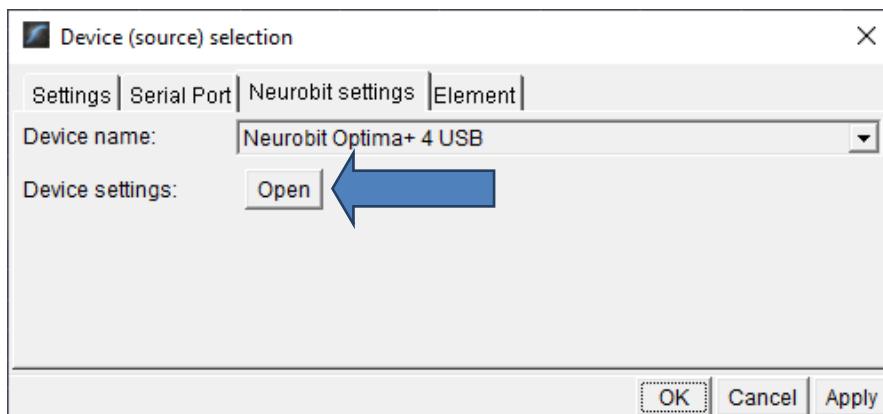Open *Brain-Trainer for BioEra*. There should be a shortcut on your desktop.
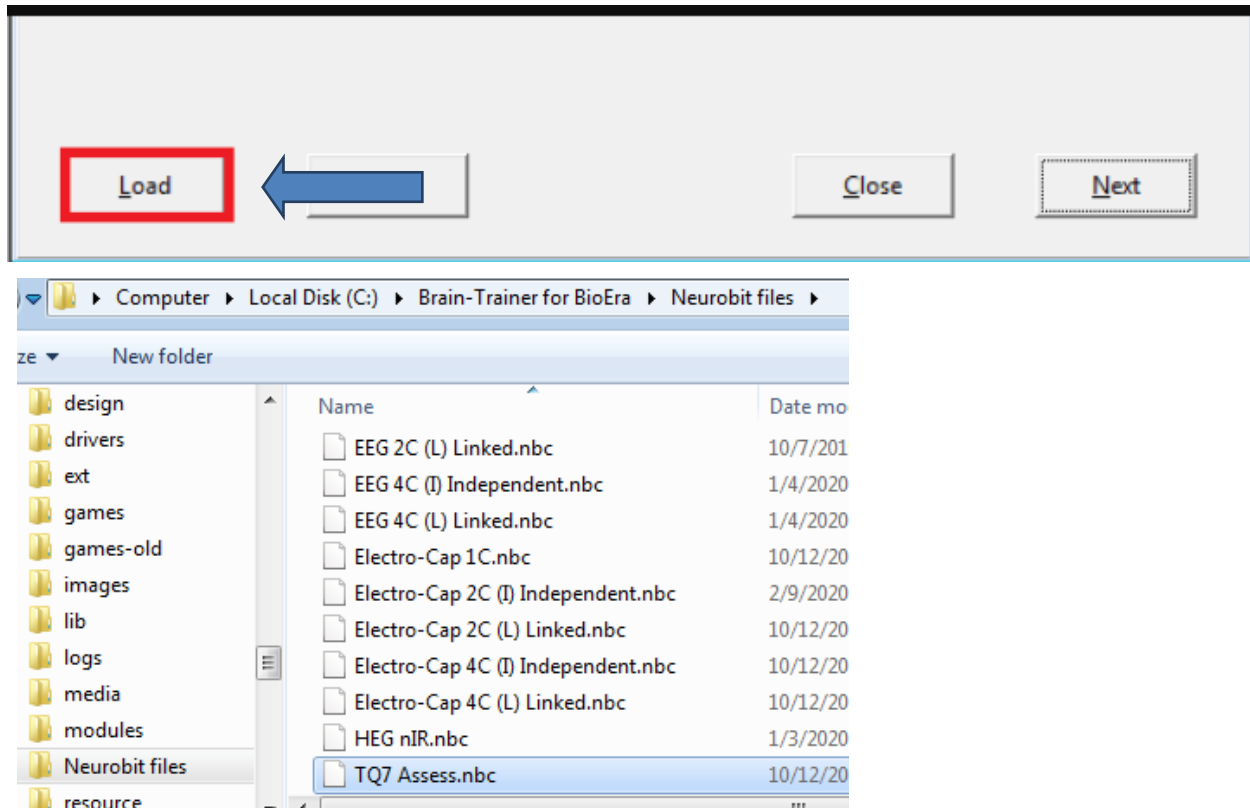
Configure channels

Open the device window by clicking the Source name.

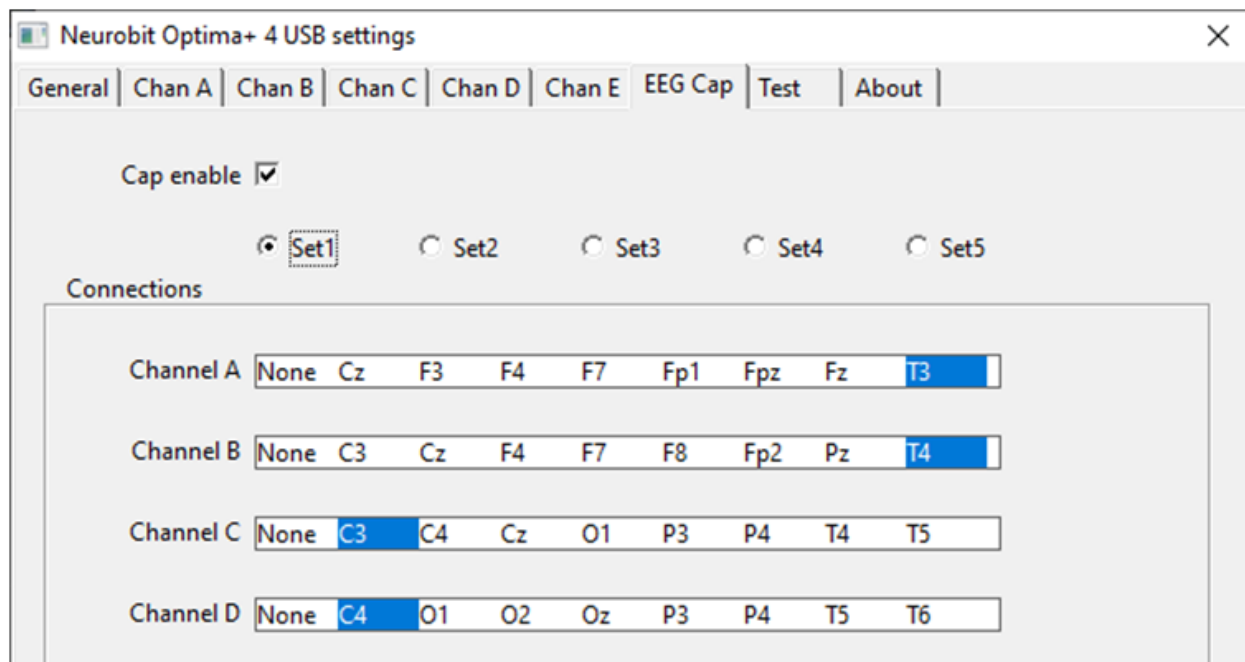Click the "Open" button for Device settings and the Device settings window will open.

Click the "Load" button at the bottom left of the Settings window. Navigate to the folder C:\Brain-Trainer for BioEra\Neurobit files. Select the file *TQ7 Assess*.
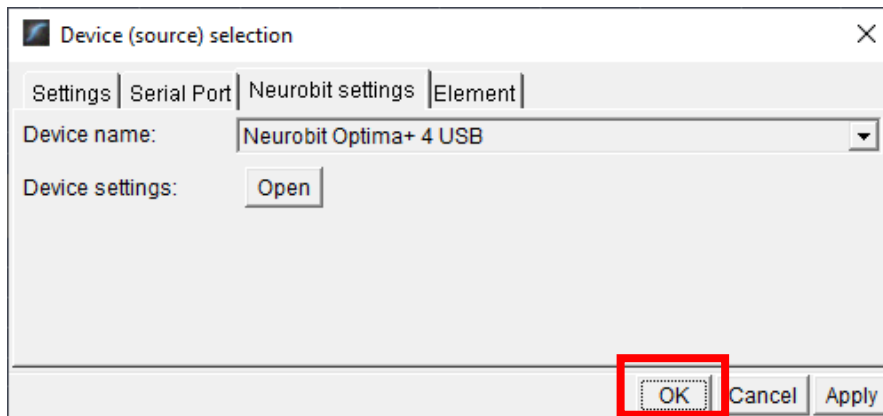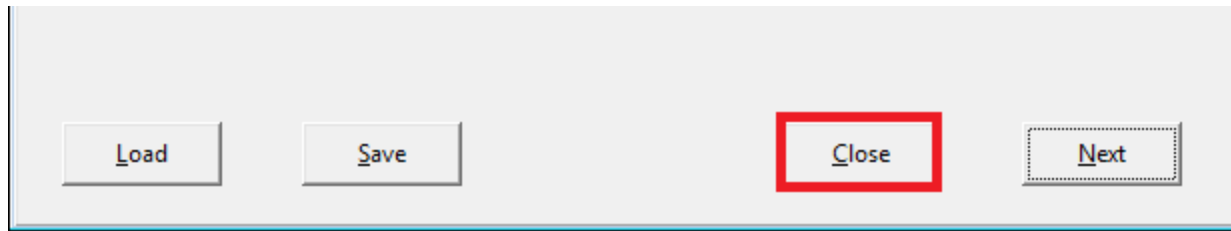

Select Sites

Click the "EEG Cap" tab and select Set1. This will select the 4 sites for the assessments first step.

Click "Close" on the Settings window and "OK" on the Device window to close it.

Open the TQ design

Click the TQ button and select the TQ design to use. In this case we demonstrate TQ 4C.
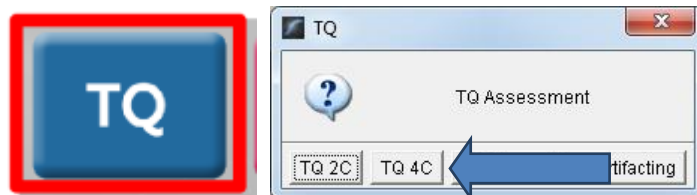
Create Client folder

Click the "Add Client" icon at the left of the design screen and enter client's name. You can make this cryptic if you like (e.g. JODO). Click "OK", then "Close."
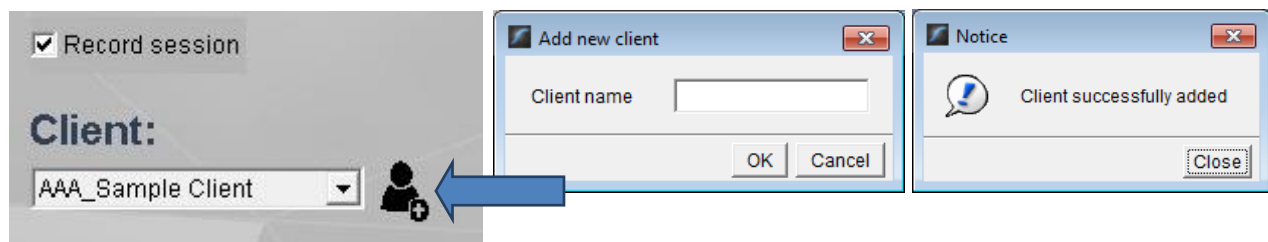
Select the client from the client list. *TIP: If you do not see the client name in the list, close the software, save and run this file: ClientListFix.*
https://www.dropbox.com/s/ebqpkmteotstwj3/BT4BE_1.1_ClientListFix.exe?dl=0
This will not be necessary after the next update. Now reopen the software and the TQ design.

APPLY ELECTRODES

Place the cap and apply gel to all sites you will include in the assessment *and* the **ground** *and* the **ear clips**. The ground is at AFz and must ALWAYS be gelled. Plug the Electro-Cap cable into the 25-pin input on the front of the unit. Plug A1 long ear clip into A- on the Optima and A2 long ear clip into B- on the Optima (or short ear clips into the drop wires on the cap).

EXPLAIN PROCESS TO THE CLIENT

Each set of sites will consist of three steps:

- First minute of recording will be relaxed, still, with eyes closed
- Second minute of recording will be relaxed, eyes open and still
- Third minute of recording will be relaxed performance of a task* with eyes open. Explain that this is not a test of the client's performance but a way of seeing how the brain responds to the challenge.

Before recording each area, explain the task and verify the client understands what to do.

Verify that the client is relaxed, sitting straight with both feet on the floor with eyes closed or open as appropriate.

* 4-Channel Tasks for Minute 3

- **T3/T4 and C3/C4**—Client **listens for detail**. Read or tell a story or article with detailed information in it while the client listens. Tell the client you may ask questions after the recording. Ask open-ended questions first (e.g. "what was the paragraph about?") and move to greater detail.
- **F3/F4 and P3/P4**—**Digit-span working memory** test. For the first 30-40 seconds read a series of digits (0-9) one second apart (start with 5 digits) and ask the client to repeat them. If client can do 5, try 6, then 7. You may choose to pause after 30-40 seconds to do Reverse Digit Span: Explain the task (listen to the numbers and repeat them in reverse order)
- **Fz/Pz and Cz/Oz**—Eyes partly open. Client **imagines a desired future change** in himself.
- **F7/F8 and T5/T6**—Client **reads silently for detail**.
- **Fp1/Fp2 and O1/O2**—**Pattern recognition**, counting the number of occurrences of the letter sequence "t, h and e", whether in a word (e.g. **the**ir, ano**the**r) or as a word itself.
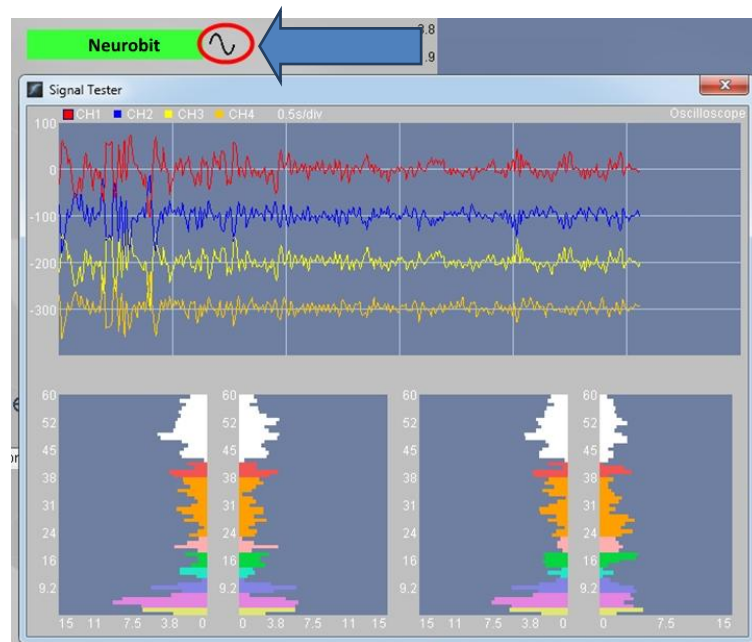
GATHER DATA

Select EEG sites

Click "Step 1 (T3-T4-C3-C4)" in the design. Notice that the design will indicate which active sites are to be used for each step. The design will indicate what the step entails for each minute – eyes closed for the first minute.
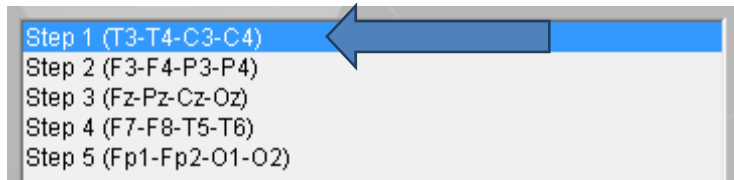
Check signal quality

Open the Signal Tester window by clicking the wave icon.

- In the Oscilloscope at the top, very regular, mechanical and fast waves suggest artifact. Very large waves or rolling/wandering baseline for a channel also suggest problems. Channels should show about the same amount of activity. A very attenuated signal in one or more channels indicates a poor connection.
- In the Power Spectrum windows below, look for spikes at 50 Hz or 60 Hz depending on your electrical system. If these are dominating the spectrum, there may be electromagnetic interference or you may have a poor connection between the skin and electrode
- If all channels show spikes and you are using a laptop, try unplugging the power transformer from the wall and the computer to run on battery. See if the spikes drop or disappear.
- If there are signal problems, re-prep electrodes and verify that the signal has improved.

When the signal is good, close the Signal Tester.

Begin data collection

1. Click Play. As soon as you click Play, the timer will count down 5 seconds, after which the assessment data gathering will start recording the first minute.

2. After 1 minute, the display will pause. The design will indicate what the next step is – eyes open for the second minute.

Step A - Eyes Open

Instruct the client to open eyes and look straight ahead. Click "Play" (white triangle) again to continue recording.

3. After 2 minutes, the display will pause again. The design will indicate what the next step is and which task is to be done – task for the third minute, listening for this set of sites.

Step A - Task
Listening

Remind the client of the task. Click "Play" again and begin performing the task.

4. After 3 minutes the display will pause again. Now you have completed this recording. Click "Stop" (white square) to save it.

Click the Restart button to prepare for the next sites.

Open Optima settings again: Click the Neurobit name in the design screen, select the Neurobit settings tab, "Open" Device settings and on the EEG Cap tab, select Set2 and close settings and device windows. Repeat for each channel set. Record a minimum of the 6 basic site pairs; if possible, record the full 10 site-pairs.

- Select next step in design.   Step 2 (F3-F4-P3-P4)
- Select next step in Settings EEG Cap tab.   ⊙ Set2
- Open Signal Tester and verify good signal and client sitting still.
- Close Signal Tester and press
- Play to begin recording data.

Press Stop (white square) after all steps of the assessment are complted.

Site chart	CHA	CHB	CHC	CHD	Task
Step 1	T3	T4	C3	C4	Listening
Step 2	F3	F4	P3	P4	Digit Span
Step 3	Fz	Pz	Cz	Oz	Imagine Desired Change
Optional	F7	F8	T5	T6	Silent Reading
Optional	Fp1	Fp2	O1	O2	Pattern Recognition

Trainer Tools

- There are three graphs: Eye artifact and Muscle Artifact (bottom left of Instruments 2) and Symmetry (Instruments 1).
- The artifact graphs should be fairly stable with the lines close together. The Symmetry graphs show the difference between one hemisphere and the other. The values generally will be above the zero line.
- If either of the artifact graphs shows a consistent problem, stop the recording and resolve the problem.
- If there are strong asymmetries, verify that these aren't due to poor connections, eye or muscle artifact.
- Recording the cleanest, most accurate possible data is the trainer's primary task here. Excessive or constant artifact in a file can't be fixed after the fact.

Special Notes

- When recording in F3/F4, Fz or F7/F8 sites, eyes-open and task segments should be done with the client's eyes "half-open"—peeking through the eyelashes—if this can be done without squinting. This will minimize eye blink artifact.
- Reading tasks should be held at eye-level (use a book stand) to minimize artifact.

The default location for saved sessions is C:\Brain-Trainer for BioEra\session. Your files will be found here inside the client folder you created at the start unless you chose an alternative location.

Using the TQ7 Client Report

Professionals

The Client Report is considered when determining the final selections for the Whole-Brain Training Plan. This should be completed by the trainer through an interview with the trainee and additional members of the support system and saved in the client folder. A saved file is ready for import.

Open the Client Report

The trainer should create a profile/login at provider.brain-trainer.com and initiate a report, sending an invitation to the trainee's email. The trainee will then be associated with the provider's account. This can be changed later if needed in the client's report | Edit.

Complete the Report

Interview the client and family and complete the questionnaire, taking the opportunity to get an understanding of issues present, or the client can complete the report on his/her own.

Save File

Click the Save Client Report button to save the Client Report file. A name is automatically assigned to the file with "CRep" in the name. The file is available immediately for download. A copy will be sent to the trainer if a trainer has been specified.

Home Trainers

The Client Report is considered when determining the final selections for the Whole-Brain Training Plan. This should be completed and saved in the client folder. A saved file is ready for import.

Open the Client Report

Follow the link **provider.brain-trainer.com,** and under Start Client Report click "Get started" to open the questionnaire.

Complete the Report

Complete the questionnaire, taking the opportunity to get an understanding of issues present. If you have purchased the Whole-Brain Training Plan, as trainer, click Add/Change trainer and type and select "Whole-Brain Training Plan Service" for Brain-Trainer to create your plan. Otherwise select your own mentor or leave the trainer field blank.

Trainer

No trainer selected. Click "Add/Change trainer" if you would like to select a trainer.

Uncheck the trainer name to remove from Client Report. Having a Trainer on a client report gives the trainer access to the client report.

+ Add/Change trainer

Save File

Click the Save Client Report button to save the Client Report. *If a trainer if a trainer has been specified*, a copy will automatically be sent to the trainer to use in creating your customized plan. If "Whole-Brain Training Plan Service" is selected, Brain-Trainer will receive the file.

The file is available immediately for download as well. If saving the file to your own computer, click "Download CSV" and save to the client folder (C:\Brain-Trainer for BioEra\session\[client folder]). A name is automatically assigned to the file with "CRep" in the name.

Appendix: TC26 Trainer's Cap Sites

Front of Head

Fp1   Fp2

AFZ ———————————— Ground

F7   F3   FZ   F4   F8

T3   C3   CZ   C4   T4

CP5   CP6   M2 ———

A1 ———   A2

T5   P3   PZ   P4   T6

O1   O2 ———— Standard references

OZ

Back of Head