# TQ7 Assessment Gathering

2 channel Assessment Gathering
with Brain-Trainer for BioEra, Optima 2 and TC26/Electrodes

CONFIGURE SETTINGS

Once the device configuration is done, it does not need to be repeated at subsequent sessions. However, channel settings will need to be set for TQ7 Assess for each assessment.

Open Software
Open *Brain-Trainer for BioEra*. There should be a shortcut on your desktop.
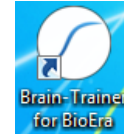
Select your device
Once the device selection is done, it does not need to be repeated at subsequent sessions. If you have already done this, you may skip to selecting EEG sites.

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

2. Click the Source (green box) in the lower center of the Main Menu. The "Device menu" window will open.
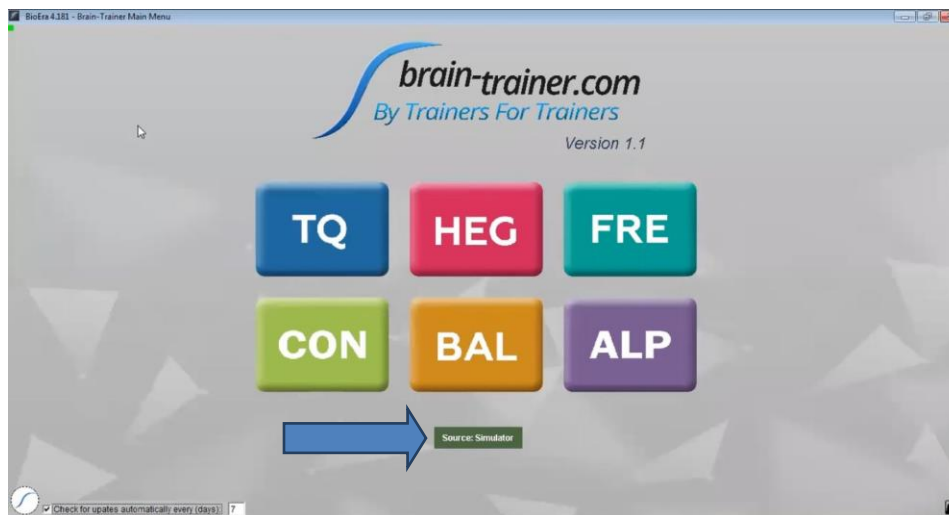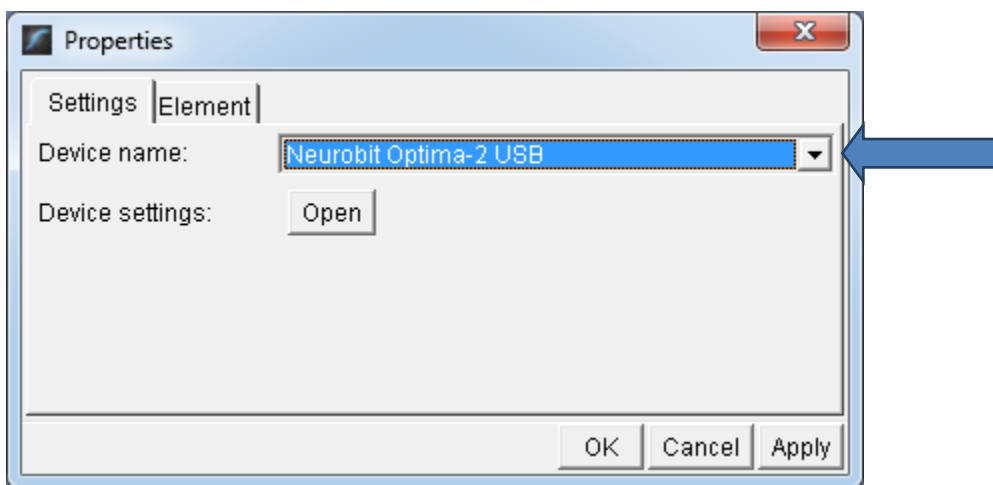

3. Select Neurobit in the dropdown menu. The program will reload.. *TIP: Type the letter N repeatedly until you see Neurobit as an option*.
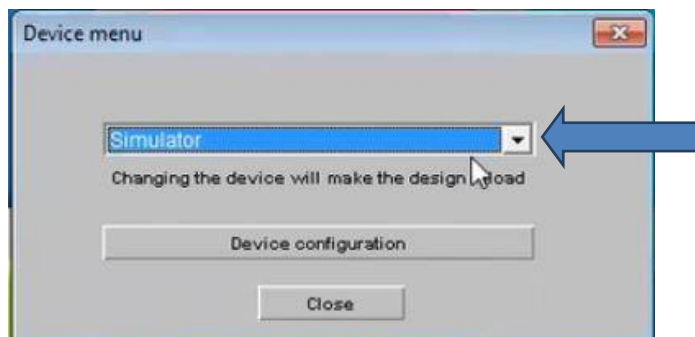
4. Click the Source again.
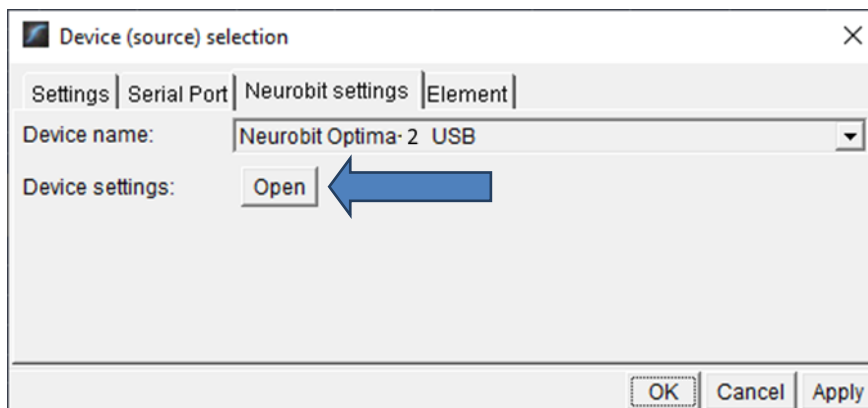
5. Click Device configuration.

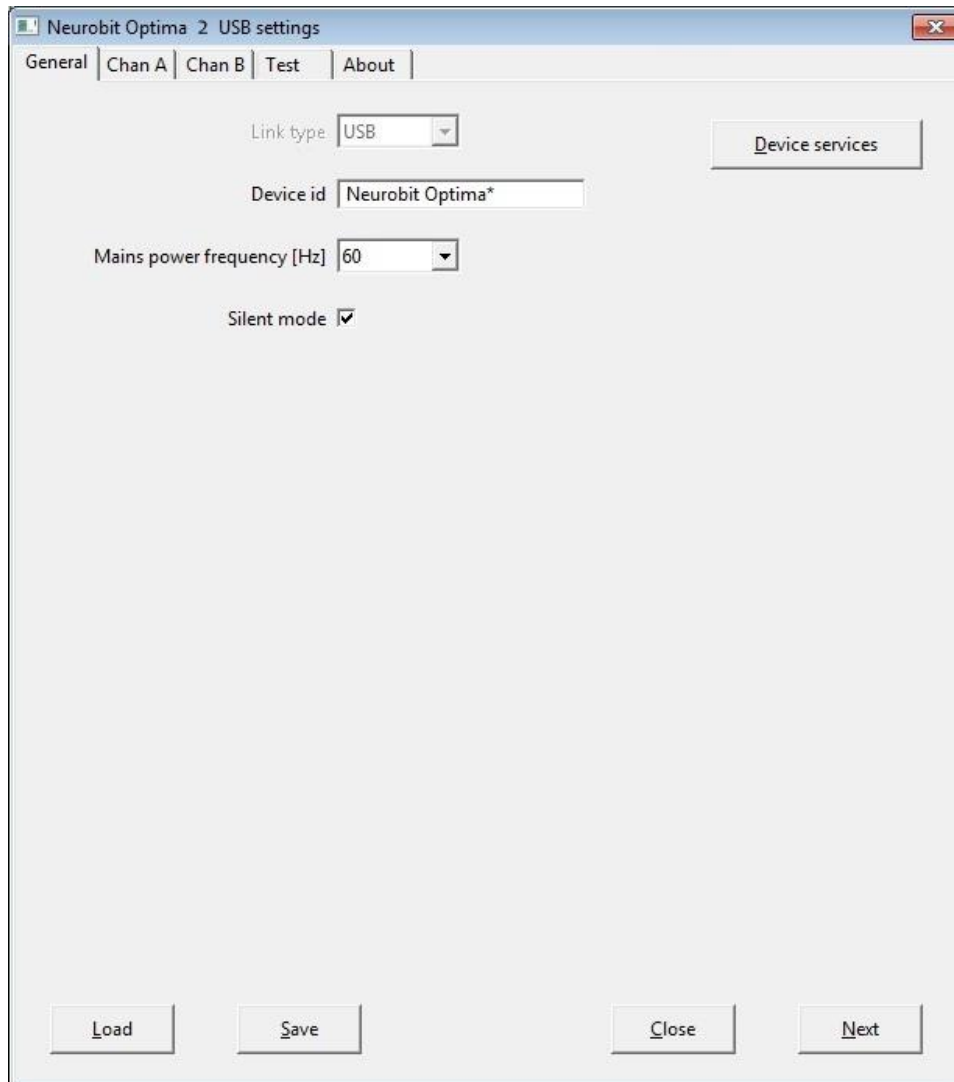6. Select your Neurobit Optima 2 device in the dropdown list .

7. Click Apply.

Configure channels

Click on the Device settings: "Open" button.

There is a tab for each measurement channel to enable and configure channels you plan to use in the next session. For convenience, you can load pre-configured settings. Load your settings in this window.

Click the Load button at the bottom left.
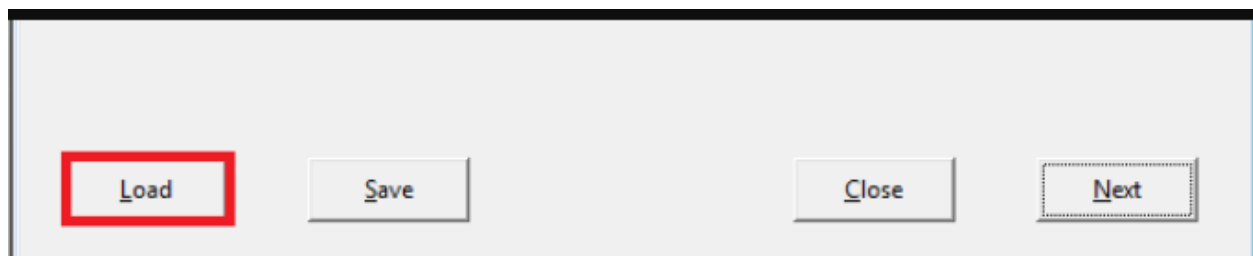
If you are not already there, navigate to the folder
C:\Brain-Trainer for BioEra\Neurobit files\Older versions\Optima 2\USB or
C:\Brain-Trainer for BioEra\Neurobit files\Optima 2 and select the
EEG 2C (L) Linked - Optima 2 file.
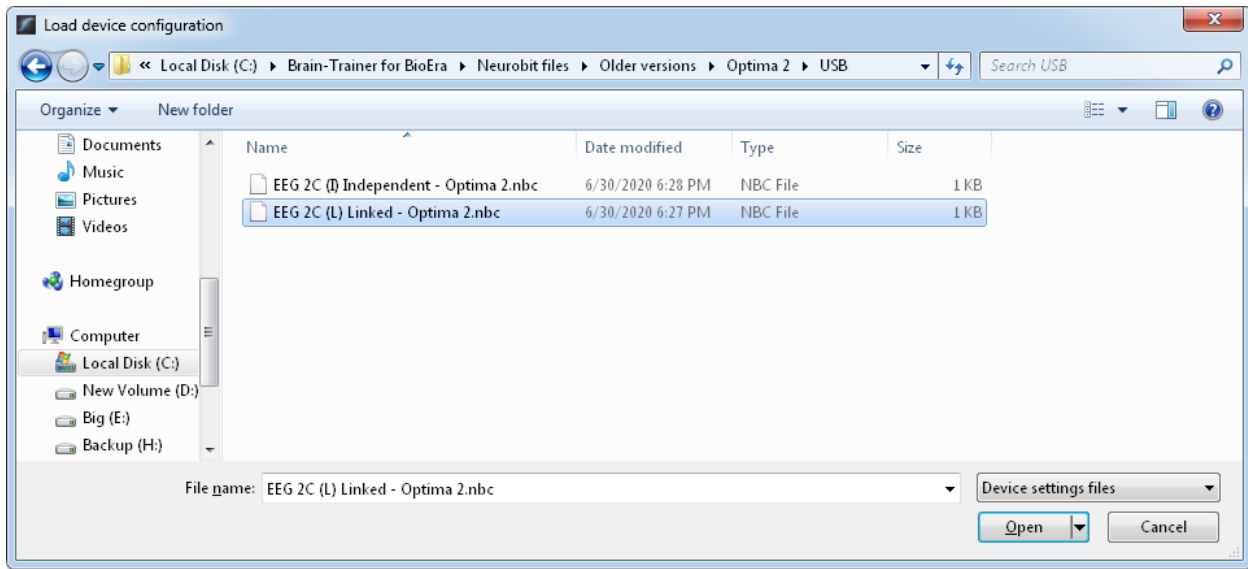
Alternatively, you can manually turn on selected measurement channels (*Channel enable* option) on individual channel tabs A, B

Click Open.

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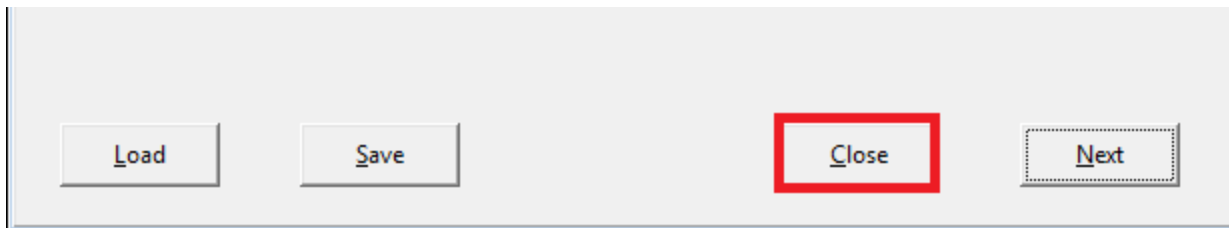
Click OK and close the Device menu.

The device name will change to Neurobit but may be red. It should turn green once you have opened the TQ design (or clicked Reload). Make sure your device is turned on.
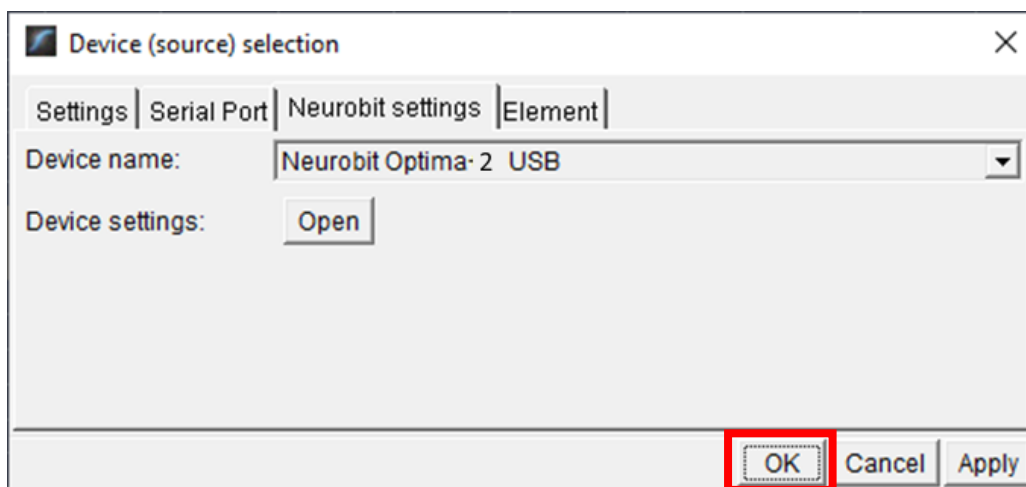
Neurobit

Open the TQ design

Click the TQ button and select the TQ design to use. In this case we demonstrate TQ 2C.

TQ

TQ

? TQ Assessment

TQ 2C   4C real-time artifacting
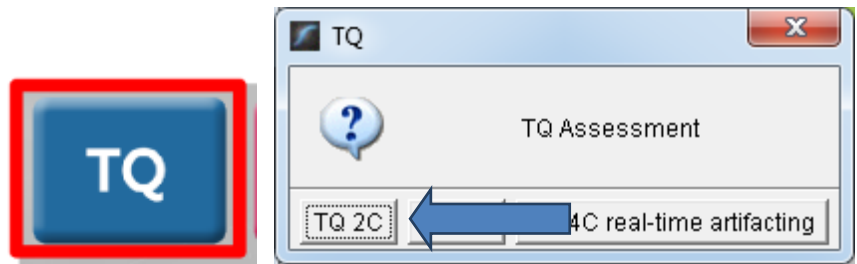
Create Client folder

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."

TQ

5

Neurobit

Client:

crka

Step A (T3-T4)
Step B (C3-C4)
Step C (F3-F4)
Step D (P3-P4)
Step E (Fz-Pz)
Step F (Cz-Oz)
Step G (F7-F8)
Step H (T5-T6)
Step I (Fp1-Fp2)
Step J (O1-O2)

Add new client

Client name

OK   Cancel

Notice

! Client successfully added

Close

BioEra 4.181 - TQ7 2C

Panic

? Select action

Refresh design   Reload design   Cancel
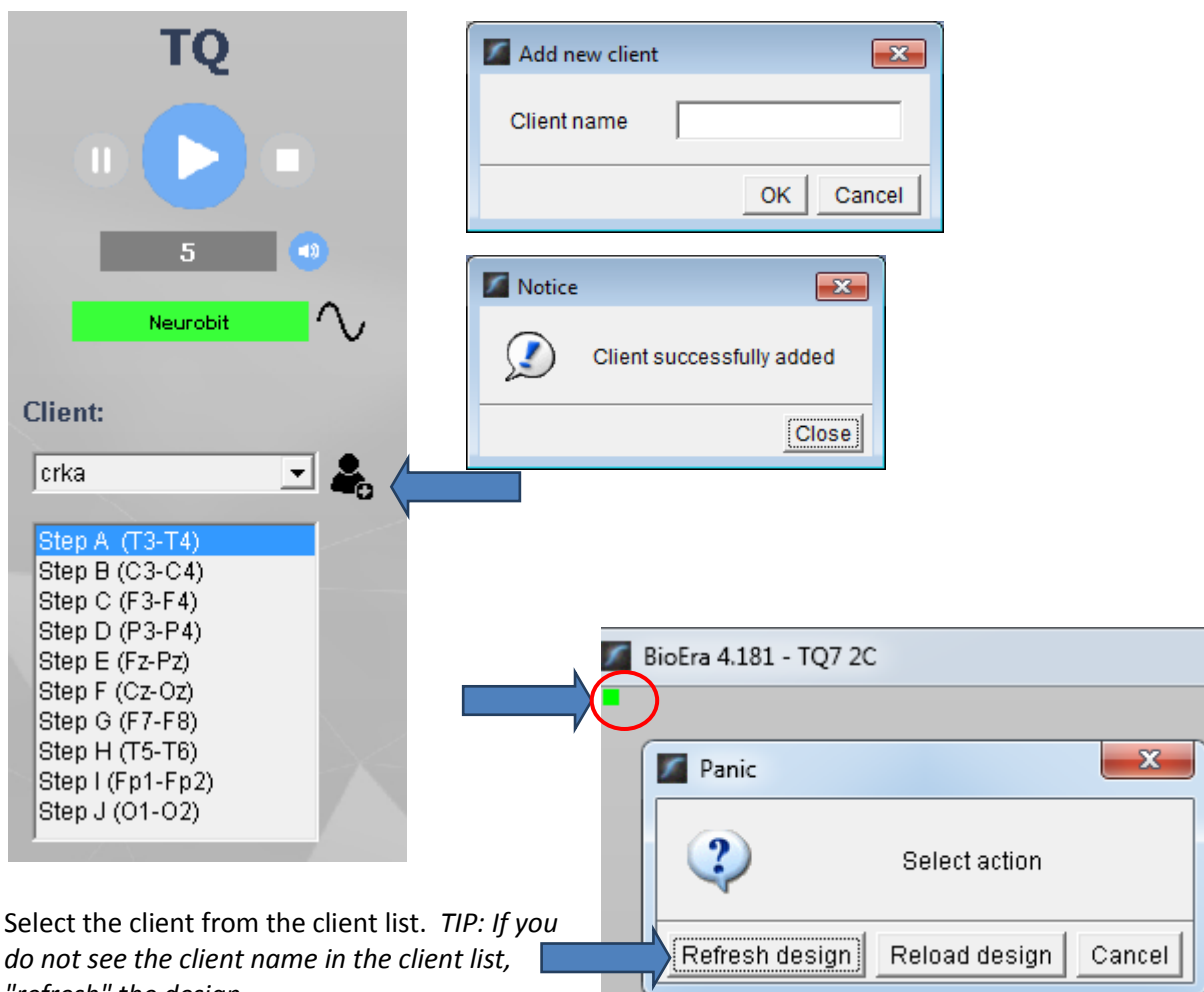
Select the client from the client list. *TIP: If you do not see the client name in the client list, "refresh" the design.*

APPLY ELECTRODES

Place cap and insert saline-saturated electrodes for threshold setting. Or place electrodes as normal if not using a cap.

Placing Ground and Reference Electrodes

- The ground/neutral on the TC26 Trainer's Cap is at **AFz** and must ALWAYS be used with saline solution.

- **A1** and **A2** are used as references for all steps, placed behind the ears (or on ear lobes with clips).

Placing Active Electrodes

When gathering from homologous sites (e.g. T3 and T4), electrodes from left hemisphere should always go in CHA, right hemisphere in CHB. When gathering on the midline (z sites), furthest forward electrode should go in CHA.

Connect the electrode wires to the Optima for step 1.

Optima: AFz to VG; **A1** to A-; **A2** to B-; **T3** to A+; **T4** to B+

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.

Active Sites/Tasks (Suggested Order)

- **T3/T4 Temporals—Listening for details**. 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 if necessary.

- **C3/C4 Centrals—Reading silently for details**. Provide appropriate reading material with factual information in it (magazine or newspaper articles can be good sources). Tell the client you may ask questions after the recording. When preparing for the next site, ask open-ended questions first (e.g. "what was the paragraph about?") and move to greater detail if the client doesn't provide it.

- **F3/F4 Frontal—Digit-span working memory**. 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)

- **P3/P4 Parietals—Serial calculation**. Start with simple problems (e.g. 2+3X4/5), with a brief pause between each step. The client should perform each calculation silently and give the result at the end. If the client does well, increase the challenge. Alternative—Ask the client to count aloud by 2 or 3 or count backward.

- **Fz/Pz Default Network**—Eyes semi-closed, let your mind wander or imagine a desired change for your future.

- **Cz/Oz Midline—Pattern recognition**. Tell the client to search 1-2 paragraphs of printed material and count the number of times the letters t, h, and e appear in sequence. This can be a word "the", beginning a word ("these"), the middle of a word ("other"), the end of a word ("lithe") or across 2 words ("what he"). A game like Where's Waldo or finding hidden images can also be used.

- *F7 & F8 (Optional)—Impulse control and language output*. Tell the client to read aloud from printed material, keeping facial and other movements to a minimum and minimizing eye movements.

- *T5 & T6 (Optional)—Sensory integration.* Repeat the task from Centrals. Provide appropriate reading material with factual information in it.

- *Fp1 & Fp2 (Optional)—Pattern recognition.* Tell the client to search 1-2 paragraphs of printed material and count the number of times the letters t, h, and e appear in sequence. This can be a word "the", beginning a word ("these"), the middle of a word ("other"), the end of a word ("lithe") or across 2 words ("what he"). A game like Where's Waldo or finding hidden images can also be used. *Same as Midline Cz/Oz site pair.*

- *O1 & O2 (Optional)—Pattern recognition.* Tell the client to search 1-2 paragraphs of printed material and count the number of times the letters t, h, and e appear in sequence. This can be a word "the", beginning a word ("these"), the middle of a word ("other"), the end of a word ("lithe") or across 2 words ("what he"). A game like Where's Waldo or finding hidden images can also be used. *Same as Midline Cz/Oz site pair.*
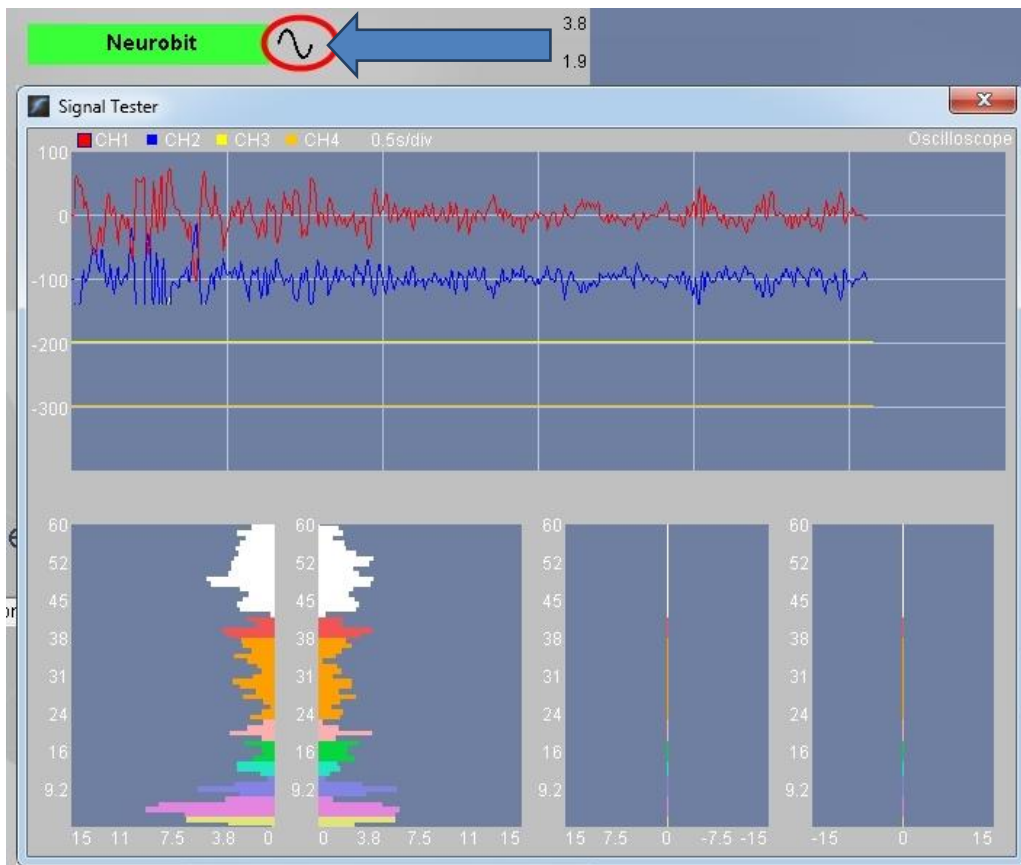
GATHER DATA

Select EEG sites

Click "Step 1 (T3-T4)" in the design.
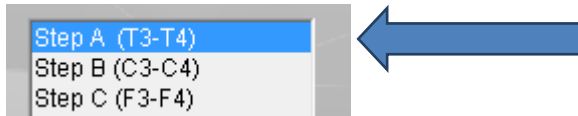
Check signal quality

Open the Signal Tester window by clicking the brain 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 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

Step A - Eyes Closed

2. After 1 minute, the display will pause. Instruct the client to open eyes and look straight ahead. Click "Play" (white triangle) again to continue recording.

Step A - Eyes Open

3. After 2 minutes, the display will pause again. Remind the client of the task. Click "Play" again and begin performing the task.
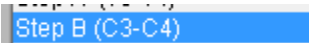
Step A - Task
Listening

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.

Move active electrodes to next sites and **r**epeat for each channel set. Record a minimum of the 6 basic site pairs (steps 1, 2, 3); if possible, record the full 10 site-pairs..

- Select next step in design.   **Step B (C3-C4)**
- Move electrodes to new sites.
- Open Signal Tester and verify good signal and client sitting still.
- Close Signal Tester.
- Press Play to begin recording data.

Trainer Tools

- There are three graphs: Muscle artifact, Eye artifact and Symmetry.
- 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.

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.

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, select "Whole-Brain Training Plan."

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.

Appendix: TC26 Trainer's Cap Sites