BrainMaster TECHNOLOGIES

The next generation of 3D Brain Imaging and Neurotherapy

BrainAvatar Software Manual

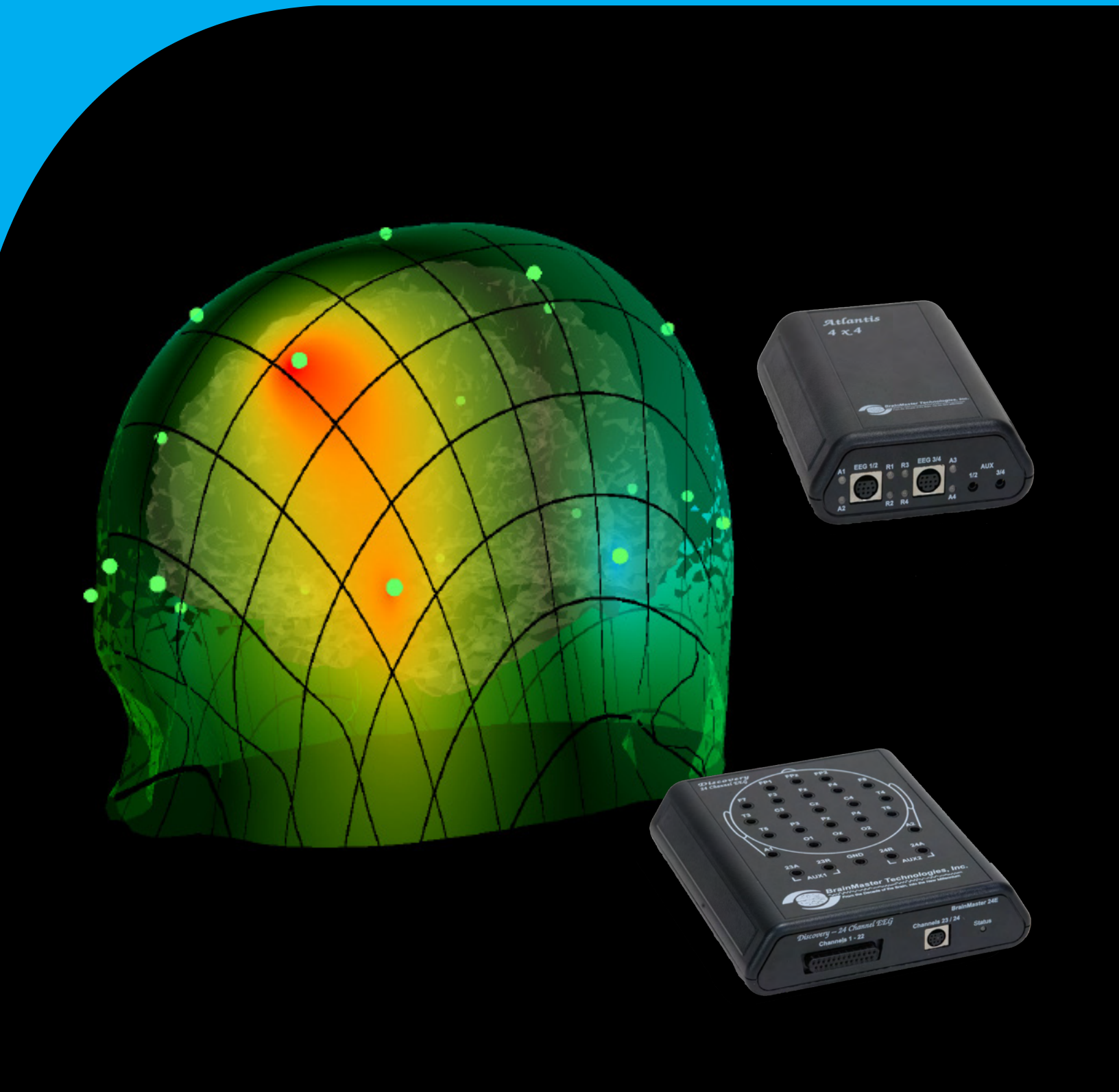


Table of Contents

Minimum PC Computer Requirements 1
BrainAvatar Software Display 2
- **Main Screen Menu** 2
- **Login Menu** 3
- **Select Trainee/Study Folder Menu** 4
- **Folder Notes Screen** 5
- **Edit Folder Info Screen** 6
- **Training/Control Screen** 7
- **Training/Control Screen (Continued)** 8
- **Window Menu** 9
- **Setup Options Menu** 10
- **Read/Write Settings File Menu** 11
- **Data Channels Menu** 12
- **Data Channels Menu (Continued)** 13
- **Acquisition Control Menu** 14
- **Montage Info Menu** 15
- **Frequency Bands Menu** 16
- **Training Protocol Menu** 17
- **Display Options Menu** 18
- **Feedback Control Menu** 19
- **Session Control Menu** 20
- **Z-Score Training Menu** 21
- **Atlantis Hardware Control Menu** 22
- **Review Session Results - Summary Graph** 23
- **Review Session Rusults - Detail Graph** 24
- **Review Session Results - Text Detail** 25
- **Review Session Results - Bar Graph** 26
- **Review Session Results - Report** 27
- **Review Session Results - Event Graph** 28
- **Review Session Results - Z-Score Graph** 29
- **ROI Select - ROI Amplitude Z-Score** 30
- **ROI Select - ROI Coherence Z-Score** 31
- **ROI Select - ROI Directional Coherence Training** 32
- **Global Settings Menu** 33
- **Z-Scores* Global Settings Menu** 34

BrainAvatar Trainee Folders 35
- **Classic (Setup Menu) Method** 35
  - Creating a Trainee Folder 35
  - Changing to a new Settings Files 37
  - Changing settings to a Settings Files 39
- **Training Screen Method** 41
  - Creating a Trainee Folder 41
  - Changing to a new Settings Files 44
  - Changing settings to a Settings Files 45
- **Outside of BrainAvatar Software (File Explorer)** 46
  - Creating a Trainee Folder 46
  - Changing to a new Settings Files 50
- **Walkthrough Guide: How to convert a Settings File from either the BrainMaster 3.0 Series Software or Discovery Series Software into the BrainAvatar 4.0 Series Software** 53
- **Basic Settings Protocols Information** 56
- **Basic Settings Protocols Crib Notes** 57
  - Alert – Beta Up Theta and Hibeta Down 57

Table of Contents

Deep – Theta Alpha Up 58
Focus – Lobeta Up Theta and Hibeta Down 59
No Limit QEEG Assessment 60
Peak – Alpha Coherence Up 61
Relax – Alpha Up Theta Hibeta Down....62
ROIA Enhance – Region of Interest Up Train....63
ROIA Inhibit Training Dynamic....64
Squash – Wideband Inhibit....65
Z-Score PZOKUL Dynamic and Z-Score PZOKUL 'C' Key....66
Z-Score sLORETA Absolute Power – Training a single Region of Interest and a single band to a normative database 67
Z-Score sLORETA PZOKUL Dynamic and Z-Score sLORETA PZOKUL 'C' Key – Training multiple regions of interest and multiple bands to a normative database....68

BrainAvatar Trainee Screens....69

Keyboard Quick Keys 69
Keyboard Quick Keys (Continued) 70
Renaming Tabs 71
Displays(Tabs) 72
Display Types & Functionality.... 73
Acquired Waveforms....73
Training Waveforms 74
Frequency Spectrum....75
Thermometer Display 76
Mini BrainMirror(FFT)....77
Mini BrainMirror(Filter) 78
Text Stats....79
Trend Graph (Components)....80
Trend Graph (Events)....81
Wide Trend (Events) (Same as Trends) 82
Z-Scores....83
Z-Bars Plot....84
Z-Maps....85
Flat Maps....86
CSA (Filtered) 87
CSA (FFT) 88
Coherence 89
Similarity....90
ROI Amplitude 91
ROI Z-Score Text 92
EEG Text....93
Impedance Maps 94
Event Text 95
FFT Graph....96
ROI Coherence Text....97
Directional Coherence Text 98
Directional Coherence Graph Display 99
ROI Description Display 100

Advanced Displays 101
Volume Head Map (Optional Purchase) 101
Volume Head Map (Optional Purchase) (Continued) 102
ROI Table 104

Table of Contents

Volume Connectivity Head Map (Optional Purchase) 105
Volume Connectivity Head Map (Optional Purchase) (Continued) 106
Panel Wizard 108
Panel Wizard Control Menu Display 108
Panel Wizard Control Menu Display (Continued) 109
Using the Panel Wizard 110
Panel Wizard Resolution Help 111
EEG Data Files 113
Simple EEG Data File Playback (Session Type Method) 113
Simple EEG Data File Playback (Playback File Method) 115
Opening an EEG Data File (Windows/File Explorer) 117
Review Playback 118
Playback Control Menu 118
Data Playback in the Review Screen (Playback button) 120
Playing back a section of an EDF File 121
EDF Annotation 123
Annotation Control Menu 123
Annotating an EDF 124
Deleting an Annotation (Review Tab) 125
Deleting an Annotation (Review Menu) 126
ZBuilder 128
ZBuilder Control Menu 128
Creating a Z-Builder File 131
Sample ZBuilder File & Layout 133
Description Section 133
Scalars Section 135
Similarities Section 137
Band Ratios Section 138
Voxels Section 139
ROI Coherence Section 140
Training to a ZBuilder File 141
Export 143
Export Control Menu 143
Exporting LORETA Files 146
Creating an EDF/CSV/Text File 148
Analyze (Optional Purchase) 150
Analyze Control Menu 150
Sample Analyze File & Layout 154
Description Section 154
Scalars Section 155
Similarities Section 157
Band Ratios Section 158
Voxels Section 159
ROI Amplitude Section 160
ROI Coherence Section 161
ROI Coherence Z-Score Section 162
Suface Z-Score Absolute Power Section 163
Suface Z-Score Connectivity Section 164

Table of Contents

Voxel Z-Score Section 165
ROI Z-Score Section 166
iCoh Section 167
gPDC Section 168
Creating an Analyze File 169
Software Themes 171
Built-In Themes 171
BMZ Files 172
Creating A BMZ from a Studies File 172
Import Received/Downloaded BMZ Files 177
BMr Extras 180
BMr Contributed Games 180
Puzzle 180
Space Race 181
Cricket 182
Bug Run 183
BMr Popups Displays 184
BMr Flash Player 196
BMr Flash Player Control Menu Display 196
Using BMr Flash Player 197
Flash Player Games 200
Color Quest (Adventure Games) 200
BrainCats 2 (Racing Games) 201
BrainMan 2 (Arcade Games) 203
BrainFish (Collecting Games) 205
App Boxes (Amplitude Games) 206
Meditation Master (Growth Games) 207
NeuroFlight (Side-Scrolling Games) 210
Fission Balls (Interactive Games) 212
BMrMultiMediaPlayer Suite 216
BMrMultiMedia(BMrMMP) Player Control Menu Display 216
Using BMrMMP 217
BMrDVD Control Menu Display 220
Using BMrDVD 221
EEGAudio Control Menu Display 224
Using EEGAudio 225
Dimmer Control Menu 228
Using Dimmer 229
Z-Score Training 232
Activating ANI Z-Score Training DLL 232
Single Tab Design - Z-Scores Using PZOK or PZOKUL 236
Multi-Tab Design - Z-Scores Using PZOK or PZOKUL 237
Changing Surface Sites 238
Changing ROI Sites 240
Changing ROI Coherence Training 242

Table of Contents

Event Wizard **244**
- **Event Wizard Control Menu Display** **244**
- **Event Wizard Control Menu Display (Continued)** **245**
- **Data Dictionary for the Event Wizard** **246**
- **Designing an Event** **257**
- **Making a Threshold to be dragged by the Thermometer** **261**
- **Basic BrainMaster Setting Protocol through the Event Wizard** **263**
  - Standard Amplitude (Alert) 263
  - Standard Z-Score Based Protocol (4 Channel PZOKUL) 264
  - Standard ROI Training (ROIA Enhance Training) 265
- **Advanced Event Wizard Controls** **266**
  - Enabling Multiple Events to control Flash Player (2 Event Example) 266
  - Enabling Amplitude Plus Events to control Flash Player 268
  - Enabling Events to control Third-Party Games 270

Session Wizard **272**
- **Session Wizard Control Screen** **272**
- **Loading a Protocol that has a Pre-Loaded Session Wizard File** **273**
- **Loading a Session Wizard File to a Pre-Existing Protocol** **274**
- **Data Dictionary for the Session Wizard** **276**
- **Designing a Session Wizard Template** **279**

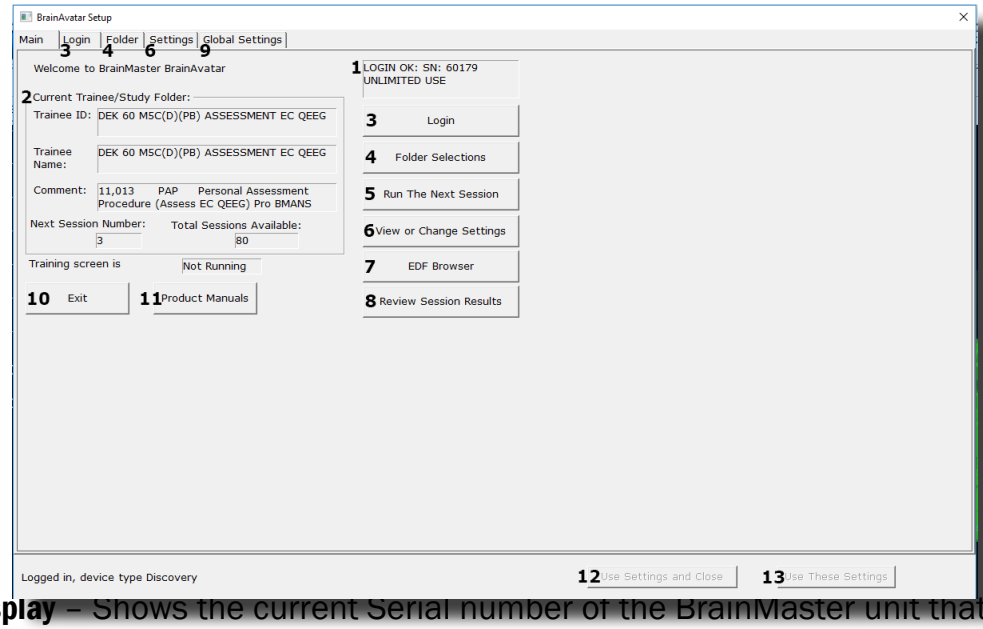
Minimum PC Computer Requirements

CPU:	Quad-core or above
Operating System:	Windows 8, Windows 10
Memory(RAM):	4GB
Graphics Card:	DirectX 10.1 or above compatible graphics card 1GB Dedicated
Optical Drives:	DVD-ROM Drive: Required for BMrDVD*
Input:	1 USB Port
Additional SW:	Microsoft Office: Required for certain reports and EEGAudio* Windows Media Player or 3rd Party DVD Decoder: Required for BMrDVD* Adobe Acrobat Reader

BMrMMP is an optional purchase

Software Screen Description

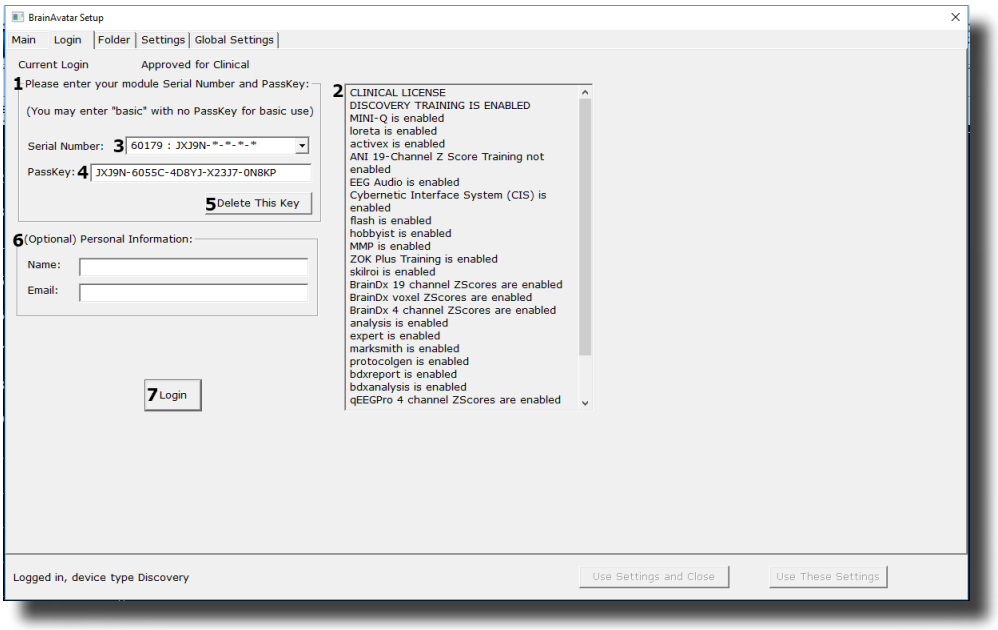
Main Screen Menu



1. **Log-In Display** – Shows the current Serial number of the BrainMaster unit that is logged in, the expiration of the software if any, and status of its license.
2. **Current Trainee/Study Display** – Shows the current trainee folder, the settings being used, how many sessions that have been used, and how many more that can be run.
3. **Login Button** – Click to open the Login Menu. You can also click the Login Tab at the top.
4. **Folders Selections Button** – Click to open the Select Trainee/Study Folder Menu. You can also click on the Folder Tab at the top.
5. **Run The Next Session Button** – Click to open the Training/Control Screen.
6. **View or Change Settings Button** – Click to open the Setup Options Menu. You can also click the Settings Tab at the top.
7. **EDF Browser Button** – Click to open the EDF Browser.
8. **Review Session Results Button** – Click to open the BReview Screen. You can also click the Review Tab at the top.
9. **Global Settings Tab** – Click to open the Global Settings Screen.
10. **Exit Button** – Click to close the Avatar Setup Screen.
11. **Product Manuals Button** – Click to open a menu displaying documentation on our software.
12. **Use These Settings and Close Button** – Click to Use all settings that you have put into place and close the Avatar Setup Screen.
13. **Use These Settings Button** – Click Use all settings that you have put into place, but keep the Avatar Setup Screen Open.

Sofware Screen Description

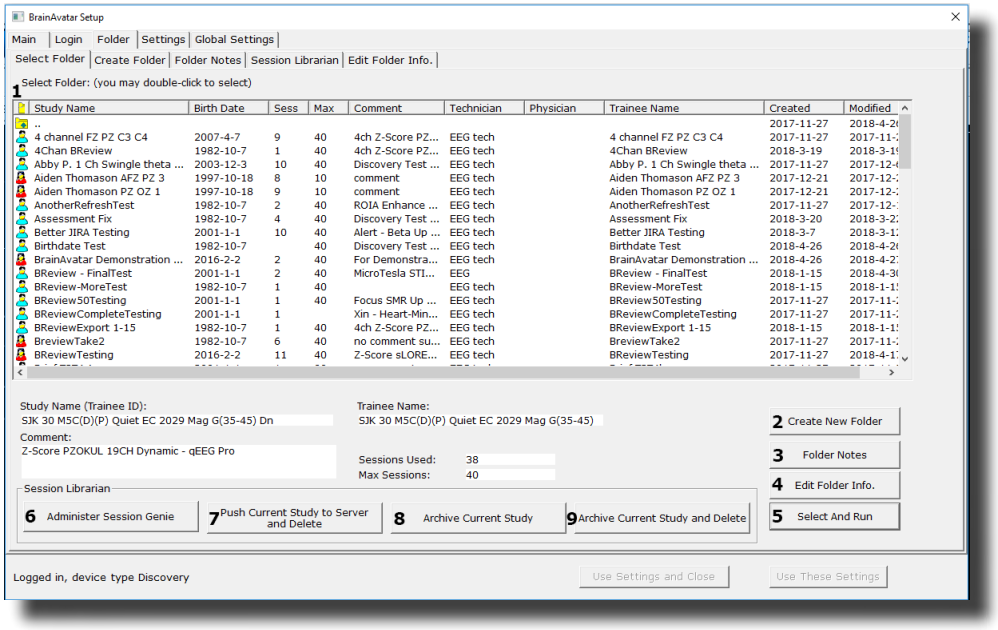
Login Menu



1. **Current Login Status** – Displays what your Current Login status is.
2. **Current Passkey Status** – Displays currently what the Passkey for your BrainMaster is enabled with.
3. **Serial Number Box** – Box where you will type in the Serial Number of your BrainMaster unit. ***PLEASE NOTE:** The BrainMaster Software has the capabilities to remember multiple passkeys. If you have entered multiple passkeys, you will be able to choose between the different passkeys by click the drop-down arrow to the right of the Serial Number Box.
4. **PassKey Box** – Box where you type in your Passkey supplied by BrainMaster Technologies. ***PLEASE NOTE:** Always be sure to keep record of your passkey. If BrainMaster Technologies is needed to retrieve the passkey for you, an Administration fee will be charged.
5. **Delete This Key Button** – Click to remove your passkey from the BrainAvatar Software.
6. **(Optional) Personal Information** – Name and E-Mail information utilized for sending BMZ Files via E-Mail.
7. **Login Button** – Click to log into the Current passkey that is entered into the BrainAvatar Software. ***PLEASE NOTE:** If you are having any difficulties logging in, please double-check your passkey. When entering, it is highly recommended that CAPS Lock is on, and the "-"are left out. If you are still having difficulties, please contact BrainMaster Technologies Technical Support.

Software Screen Description

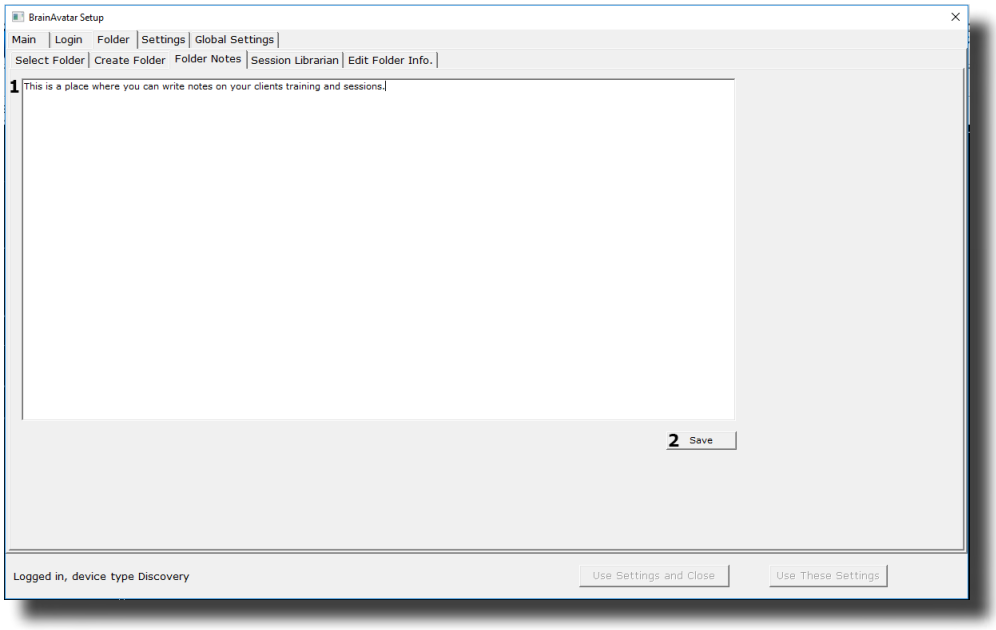
Select Trainee/Study Folder Menu



1. **Folder Selection List** – List where you can select from already created Studies folder. You may double-click to select a file. When highlighted information on the folder will be displayed below this box.
2. **Create New Folder Button** – Click to create a new Study Folder to be used. You can also click the Create Folder Tab at the top.
3. **Folder Notes Button** – Click to create or look at a Note page for a specific client folder. You can also click the Folder Notes Tab at the top.
4. **Edit Folder Button** – Click to edit the folder information for the selected folder. You can also click the Edit Folder Info. Tab at the top.
5. **Select and Run Button** – Click to confirm the folder that you have highlighted and exit the Set-up Menu.
6. **Administer Session Genie** – Click to utilize the Session genie. ***PLEASE NOTE:** Administer Session Genie will not be available on Remote User Systems.
7. **Push to Current Study to Server and Delete Button** – Click to remove a no longer wanted folder from your Folder Selection List. ***PLEASE NOTE:** Using this feature will not remove your file permanently. Using this feature creates a BMZ version of your folder in case it is needed in the future.
8. **Archive Current Study Button** – Click this to back-up the current folder that is selected.
9. **Archive Current Study and Delete Button** - Click to back-up the current folder that is selected, and remove it.

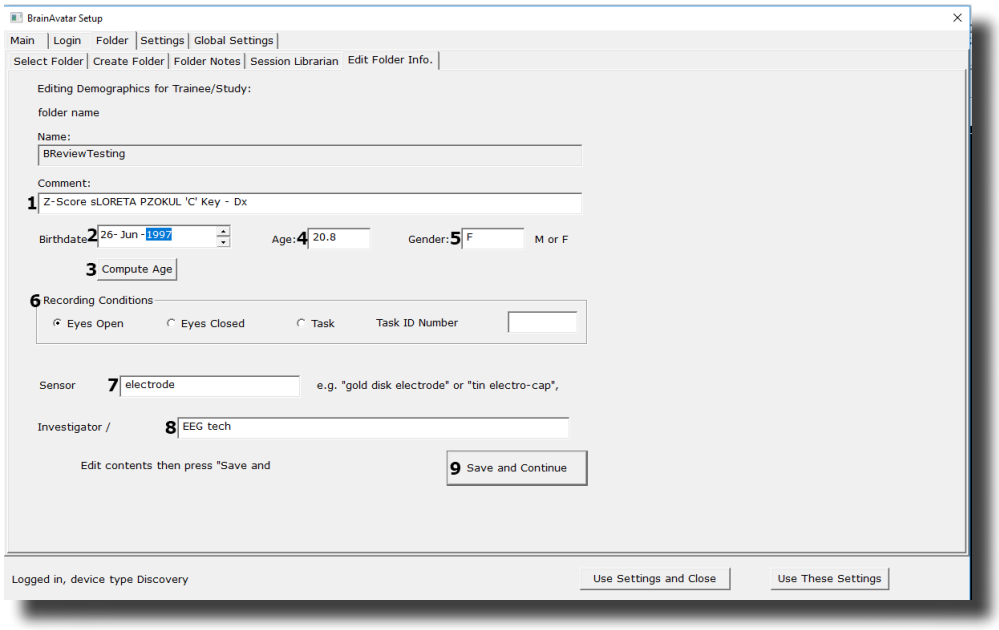
Software Screen Description

Folder Notes Screen



1. **Text Area** – Area, where you can type notes for the particular client.
2. **Save Button** – Click to save any changes to the Text Area.

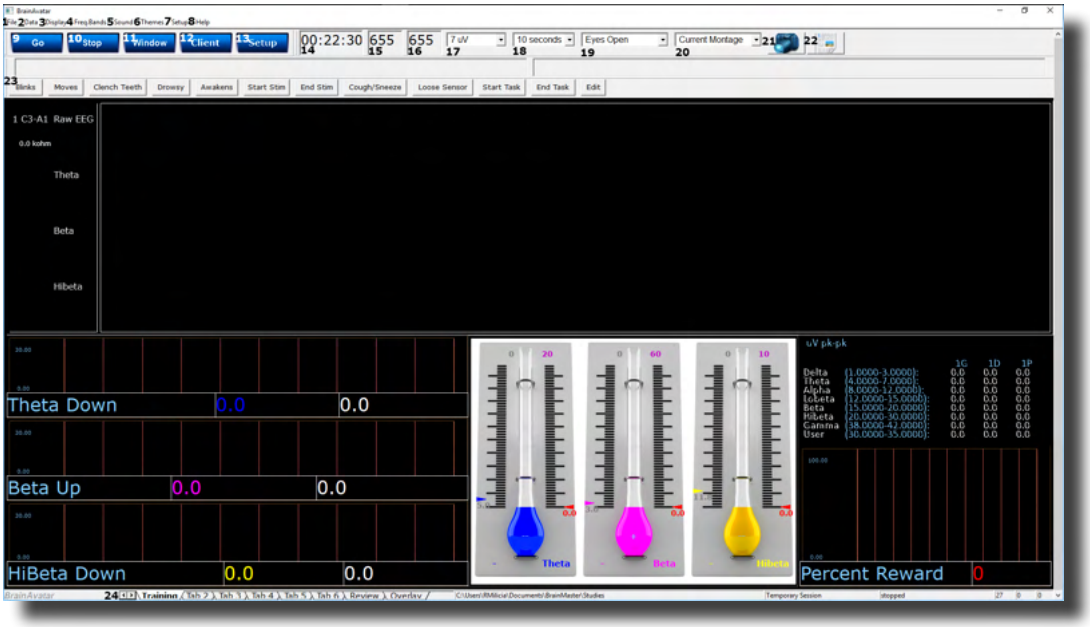
Edit Folder Info Screen



1. **Comment Line** – Line that a customer can add a comment for the selected Trainee folder.
2. **Birthday Section** – Click to put in the client's Birthday. As you change the date, the age will set itself
3. **Compute Age Button** – Click to compute the age of the client based on their entered Birthday. You will use this button, if you import a Protocol, and the age does not match based off of the birthday
4. **Age Line** – Line where you enter the clients age.*****PLEASE NOTE:** You do not need to manually set this. The Age will set itself based off of the Birthday.
5. **Gender Line** – Line where you enter the clients gender. M = Male and F = Female
6. **Recording Conditions Section** – Section where you can adjust the Recording condition.*****PLEASE NOTE:** If you set Recording Condition to Task, you will need to assign a 3-Digit number to it using the box next to the Task Recording Condition.
7. **Sensor Section** – Section that you can input the type of sensor that you are using for the client.
8. **Investigator Section** – Section that you can enter the person who is running the session.
9. **Save and Continue Button** - Click to save the protocol and exit to the Folder Selection Tab

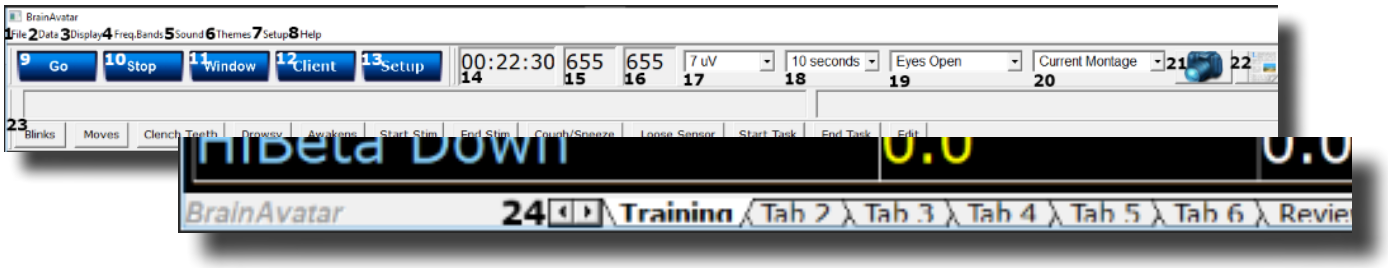
Software Screen Description

Training/Control Screen



1. **File Tab** – Click to create a new study, open existing study, export files and import a file.
2. **Data Tab** – Click to access COM, filter settings, playback options, and Atlantis Setup Menu.
3. **Display Tab** – Click to choose from various display options. This option will display the chosen option for whatever tab you are currently looking at.
4. **Freq. Bands Tab** – Click to choose what filtered waveforms to display.
5. **Sound Tab** – Click to choose your sound settings.
6. **Themes Tab** – Click to adjust your Theme of the Training Screen.
7. **Setup Tab** – Click to open up the Main Screen Menu.
8. **Help Tab** – Click to view Help information.
9. **GO Button** – Click to run a session. ***PLEASE NOTE:** Be sure that before clicking GO that your BrainMaster Unit is plugged in, installed, and the software is set to the proper COM Port.
10. **STOP Button** – Click to stop a session.
11. **Window Button** – Click to open the Window Menu.
12. **Client Button** – Click to open the Client Training Window.
13. **Setup Button** – Click to open the Main Screen Menu.
14. **Clock Window** – Window that will display the time for your session as defined from the Session Control Menu.
15. **Points 1 Window** – Box that will show the points gained from training.
16. **Points 2 Window** – Box that will show the points gained from training. This will only be activated, if defined either from the Protocol Menu or the Event Wizard.
17. **Gain Box** – Used to change the Gain of the Raw EEG.
18. **Second Box** – Used to change how many seconds of data to be displayed on the screen.

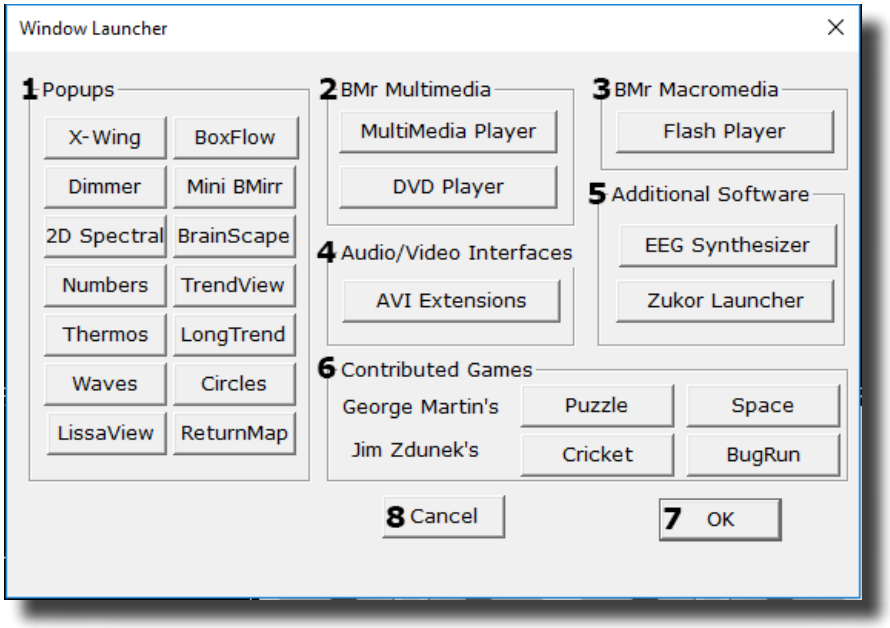
Training/Control Screen (Continued)



19. **Recording Condition Button** – Click change the recording condrtion. When switching between condtions, a New EDF will be created.
20. **Montage Button** – Click to change between saved, and pre-created Montages. ***PLEASE NOTE:** The Montage Button will only work in the Training Waveforms Display.
21. **Picture Button** – Click to capture a screenshot of what is happening on the screen. The image will be saved to the Current Study folder.
22. **Report Button** – Click to create a report that will take a screen capture and save the picture in this report.***PLEASE NOTE:** Microsoft Word is required for this feature.
23. **Annotation Button** – Click one of the 12 buttons, to annotation Buttons. When this is pressed, it will place a marker on the EDF, and the annotation Buttons name.
24. **Tab Section** – Area where you can switch which display tab you wish to look at.

Software Screen Description

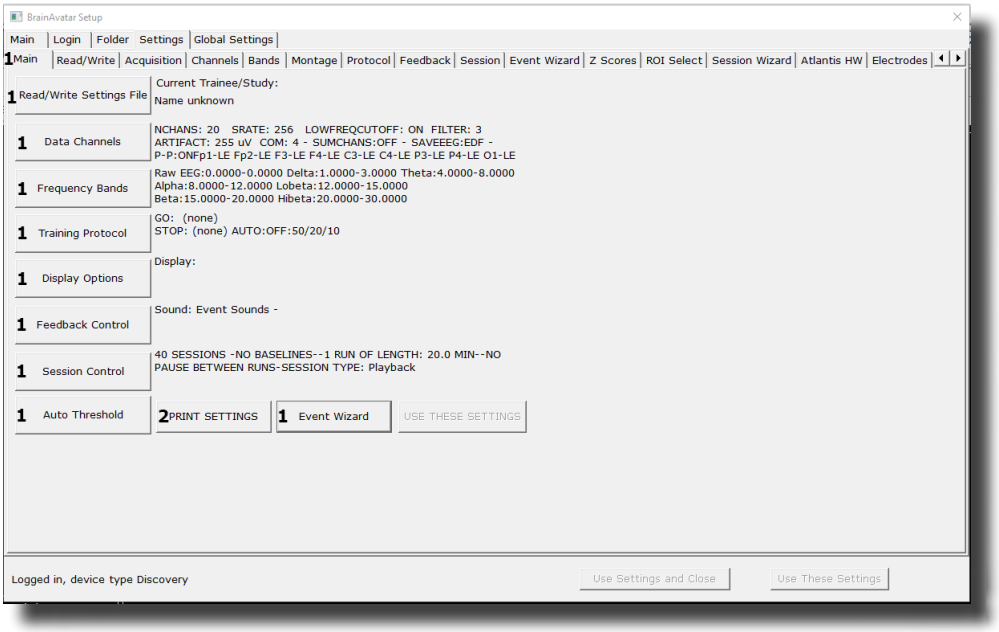
Window Menu



1. **Popups Section** – Click the included buttons to launch additional display/training feedback options used for feedback. ***PLEASE NOTE:** More Information on the Popups Section in document 531-343.
2. **BMr Multimedia Section*** – Click the included buttons to launch either BMrDVD* or BMrMMP* used for feedback. ***PLEASE NOTE:** More Information on the Popups Section in document 531-308.
3. **BMr Macromedia Section** – Click the included buttons to launch the BMrFlashPlayer used for feedback. ***PLEASE NOTE:** More Information on the Popups Section in document 531-313.
4. **Audio/Video Interfaces Section** – Click the included buttons to launch EEGAudio*. ***PLEASE NOTE:** More Information on the Popups Section in document 531-308.
5. **Additional Software Section** – Click the included buttons to launch additional software.
6. **Contributed Games Section** – Click the included buttons to launch contributed games used for feedback. ***PLEASE NOTE:** More Information on the Popups Section in document 531-343.
7. **OK Button** – Click to close the Window Menu.
8. **Cancel Button** – Click to close the Window Menu.

**BMrMMP, BMrDVD, and EEGAudio make up the MultiMediaPlayer Suite. MultiMediaPlayer is an Optional Purchase.*

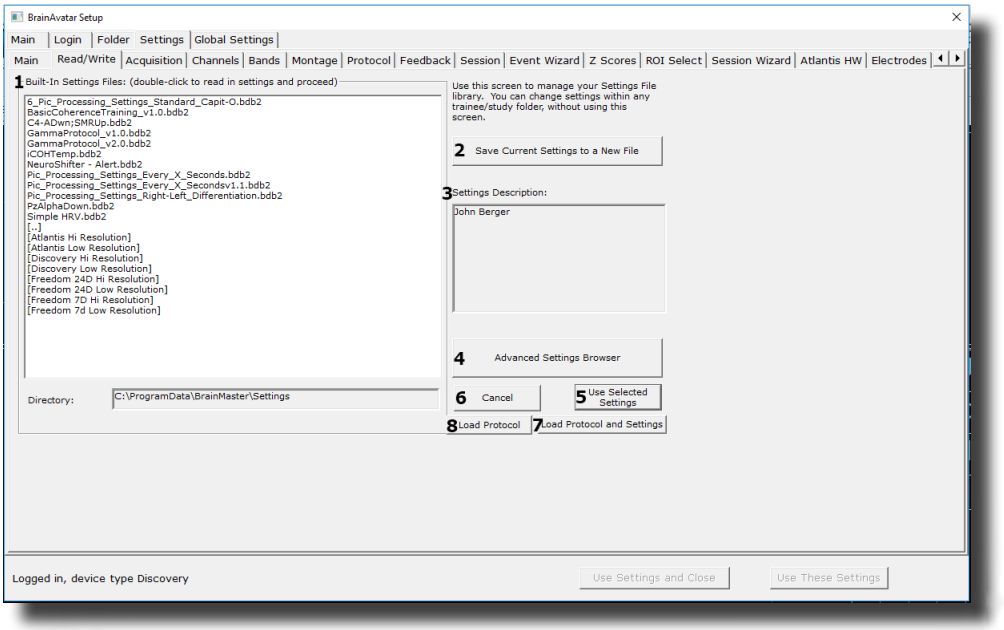
Setup Options Menu



1. **Various Menu Buttons** – Click to open the associated menus. You can also click the tabs that are located at the top.
2. **PRINT SETTINGS Button** – Click to print a hard copy of all of your Settings.

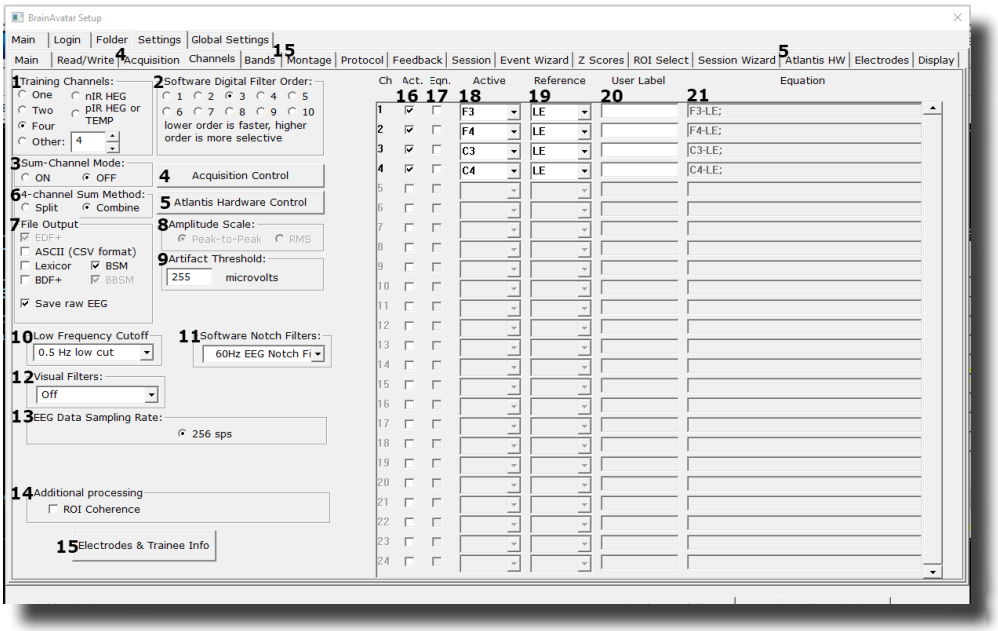
Software Screen Description

Read/Write Settings File Menu



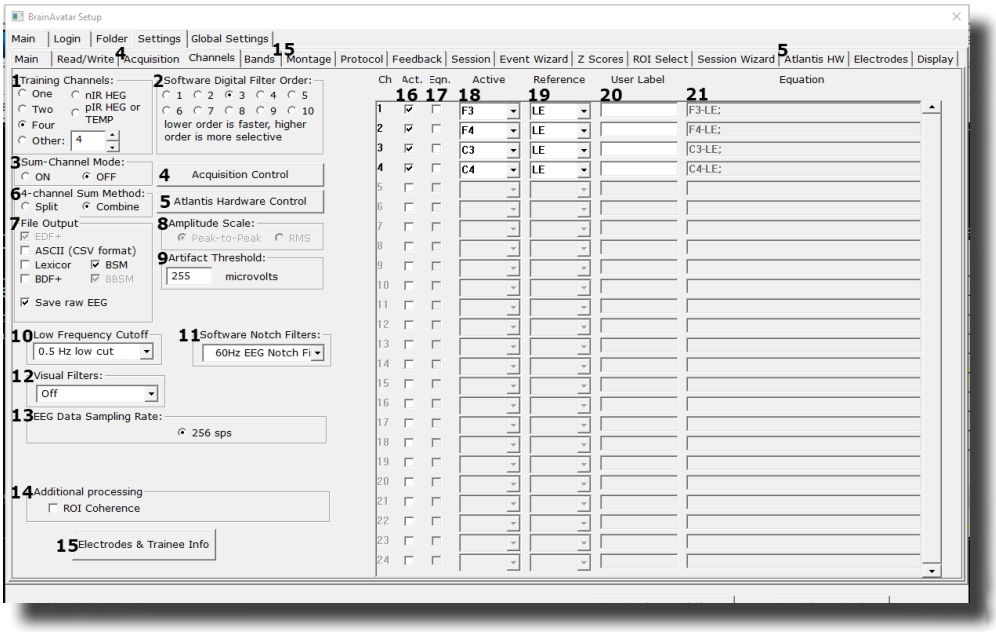
1. **Settings File Name Section** – Section where a new setting may be selected. If you would like to have the selected setting file used in your Studies folder, you may double-click the Settings file to read the settings file into the folder. In the Directory Box, it will let you know which folder you are currently in. ***PLEASE NOTE:** Find more Information on this selection in document 531-311.
2. **Save Current Settings to a New File Button** – Click to save the current Studies folders settings into a new Settings file. ***PLEASE NOTE:** Find more Information on this selection in document 531-311.
3. **Settings Description Section** - Lists out basic information about the highlighted Settings File.
4. **Advanced Settings Browser Button** – Opens Windows Explorer, to allow you to use Windows Explorer to find the Settings Protocol you would like to select. ***PLEASE NOTE:** Find more Information on this selection in document 531-311.
5. **Use Selected Settings Button** – Click to choose the highlighted protocol contained in the Settings File Name Section.
6. **Cancel Button** – Click to cancel changes and exit the Read/Write Settings File Menu.
7. **Load Protocol and Settings Button** - Click to utlize an XML generated from supported 3rd Party applications and select the proper settings file.
8. **Load Protocol Button -** Click to utilize an XML generated from supported 3rd Party applications in the currently loaded settings.

Data Channels Menu



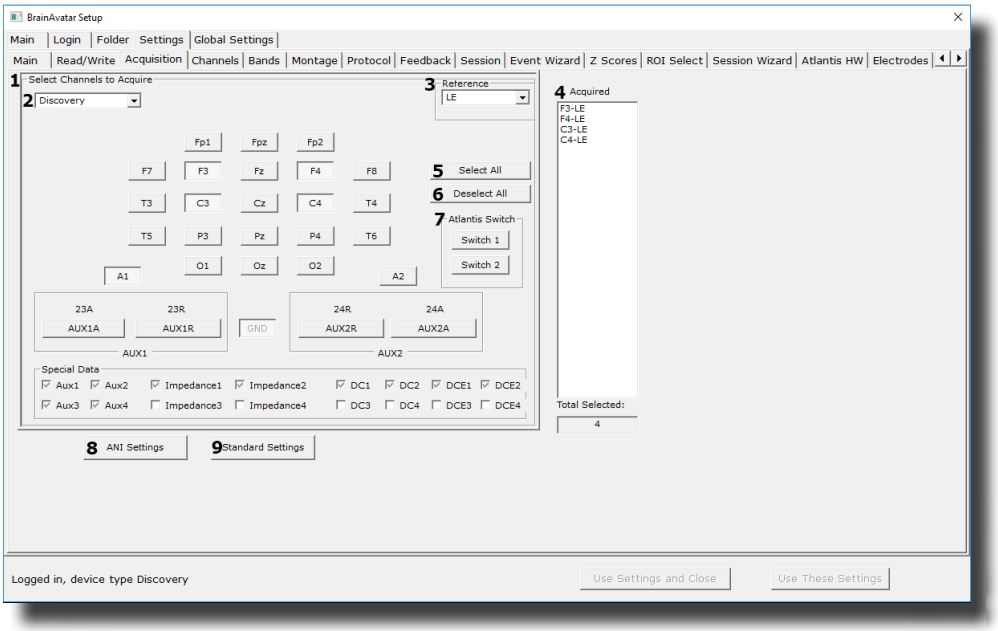
1. **Training Channels Section** – Section where you choose the EEG Channels for feedback.
2. **Software Digital Filter Order Sections** – Section where you set the Digital Filter order. The higher the filter order, the more selective the system is.
3. **Sum-Channel Mode Section** – Section where you set the Sum-Channel mode on or off.
4. **Acquisition Control Button** – Click to enter the Acquisition Control Menu. You can also click the Acquisition tab at the top.
5. **Atlantis Hardware Control Button** – Click to enter the Atlantis Hardware Control Menu. You can also click the Atlantis HW tab at the top.
6. **4-Channel Sum Method Section** – Section where you can set the 4-Channel Sum Method to either Split or Combine.
7. **File Output Section** – Section where you can choose what type of File Outputs that you would like to be created for review.
8. **Amplitude Scale Section** – Section where you can set the Amplitude scale to either Peak-to-Peak or RMS.
9. **Artifact Threshold Section** – Section where you can adjust the artifact rejection range.
10. **Low Frequency Cutoff Section** – Section where you can enable or disable the Low Frequency Cutoff.
11. **Software Notch Filters Section** – Section where you can turn on or off the Software notch filters.
12. **Visual Filters Section** - Section where you can turn on a Visual Filter that displays the data with a filter of 1.5 - 34Hz.
13. **EEG Data Sampling Rate Section** – Section where you can adjust the Sample rate you are collecting from the data.

Data Channels Menu (Continued)



14. **Additional Processing Checkbox -** Click to choose additional settings for additional data processing
15. **Electrode & Trainee Info Button** – Click to enter the Montage Menu. You can also click the Montage tab at the top.
16. **Channel Check Boxes** – Check boxes to control what channels will be trained. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
17. **Equation Check Boxes** – Allows you to toggle between Channel combinations defined by the Active and reference site boxes or the Equation Box for the Channel. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
18. **Active Site Boxes** – Boxes where you can choose the active site location. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
19. **Reference Site Boxes** – Boxes where you can choose the reference site location. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
20. **User Label Box** – Allows you to give a name to the Channel, as opposed to being displayed as the Channel Combination or Equation. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
21. **Equation Box** – Allows you to define the channel, through an equation, rather than just an Active and Reference Electrode. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.

Acquisition Control Menu

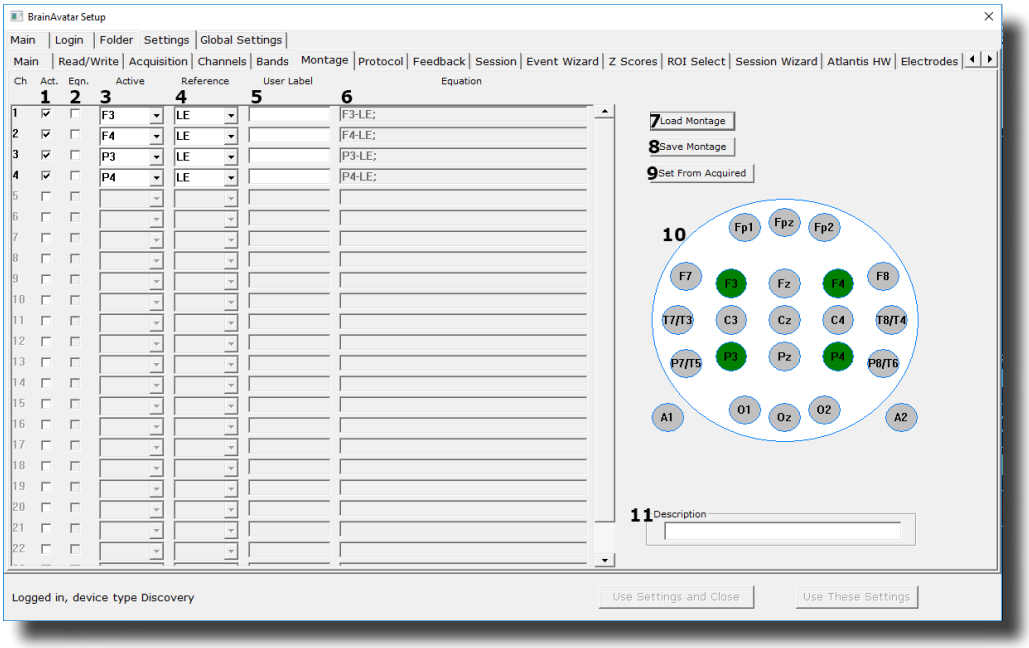


1. **Select Channels to Acquire Section** – Section where you can choose individual channels to either acquire, or not acquire from, or which Hardware you are utilizing.
2. **Special Data Section** – This section is for the Atlantis Data. It will allow you to choose special data for the Atlantis to use.
3. **Reference Section** – This section is used to define the type of reference you would like to use for the Acquisition. You can choose either LE (Linked Ears) or A1.
4. **Acquired Channels Section** – Section that displays the current channels that are being acquired from.
5. **Select All Button** – Click to select to acquire from all 24 Channels.
6. **Deselect All Button** – Click to De-select all channels being acquired.
7. **Atlantis Switch Section** – This section is for the Atlantis Data. It will allow you to choose to acquire the Switch* Outputs of the Atlantis Hardware
8. **ANI Settings Button** – Click to change the acquired channels into the ANI Channel order
9. **Standard Settings Button** – Click to change the acquired channels into the standard Discovery channel order.

**Atlantis Switch outputs do not come standard*

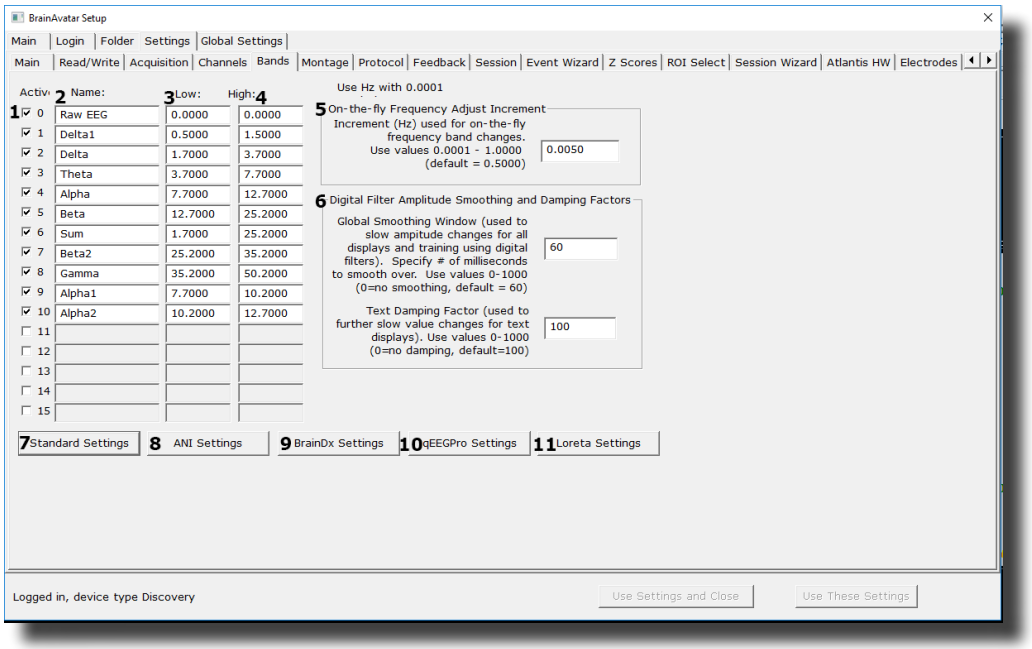
Software Screen Description

Montage Info Menu



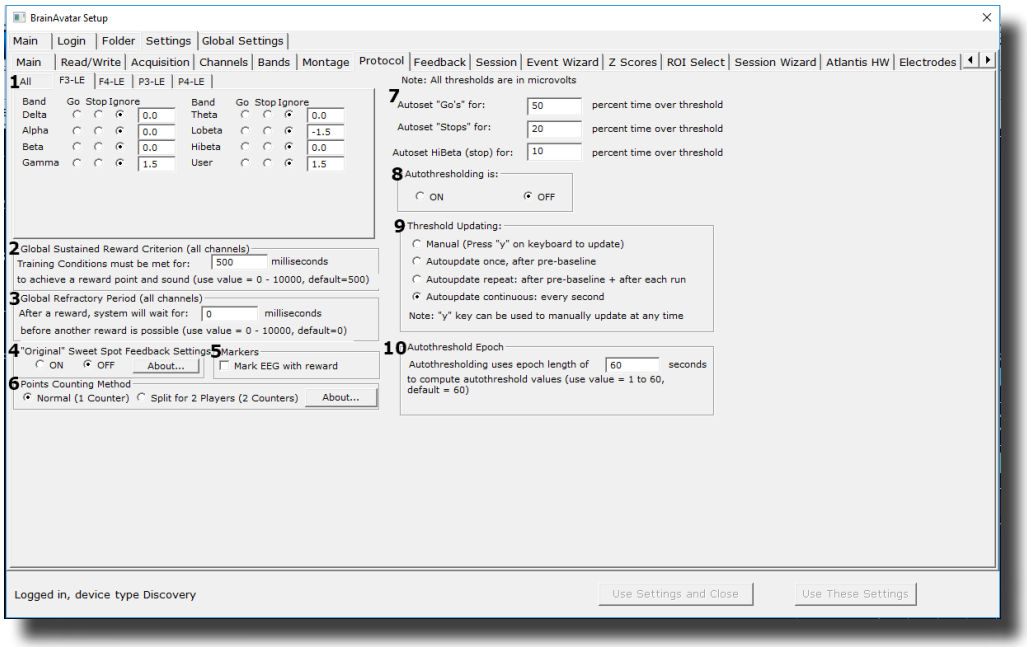
1. **Channel Check Boxes** – Check boxes to control what channels will be trained. ***PLEASE NOTE:** These settings can also be adjusted in the Data Channels Menu.
2. **Equation Check Boxes** – Allows you to toggle between Channel combinations defined by the Active and reference site boxes or the Equation Box for the Channel. ***PLEASE NOTE:** These settings can also be adjusted in the Data Channels Menu.
3. **Active Site Boxes** – Boxes where you can choose the active site location. ***PLEASE NOTE:** These settings can also be adjusted in the Data Channels Menu.
4. **Reference Site Boxes** – Boxes where you can choose the reference site location. ***PLEASE NOTE:** These settings can also be adjusted in the Montage Info Menu.
5. **User Label Box** – Allows you to give a name to the Channel, as opposed to being displayed as the Channel Combination or Equation. ***PLEASE NOTE:** These settings can also be adjusted in the Data Channels Menu.
6. **Equation Box** – Allows you to define the channel, through an equation, rather than just a Active and Reference Electrode. ***PLEASE NOTE:** These settings can also be adjusted in the Data Channels Menu.
7. **Load Montage Button** – Click to load a pre-existing montage(.bmm).
8. **Save Montage Button** – Click to save your created montage for future use as a .bmm.
9. **Set From Acquired Button** – Click to load the electrode placements from the Acquisition screen.
10. **Electrode Selection Display** – Section that displays the electrodes that have been selected in either the Active or Reference section of the Montage Screen.
11. **Description Box** – This box displays the Description given to a saved Montage when loaded into the system. This will be blank if a Montage has not been loaded.

Frequency Bands Menu



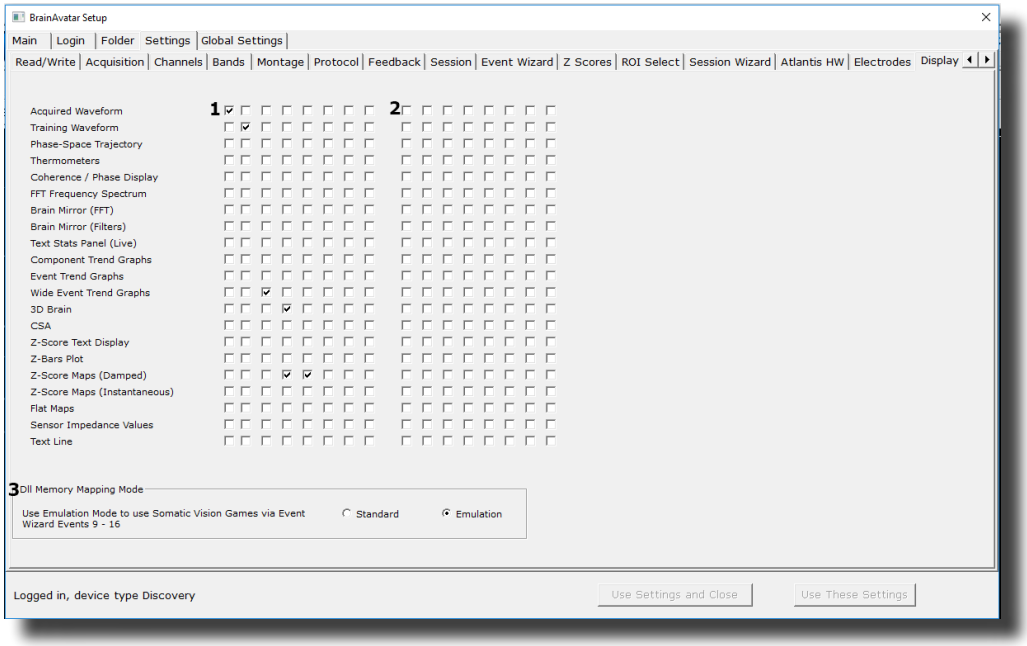
1. **Frequency Band Check Boxes** – Check Boxes to control what frequency bands are active.
2. **Name Boxes** – Boxes where you can name/rename any frequency bands.
3. **Low Boxes** – Boxes that you set the Low Hz of the Frequency Band.
4. **High Boxes** – Boxes that you set the High Hz of the Frequency Band.
5. **On-the-fly Frequency Adjustment Increment Section** – Section where the increment of the On-the-fly frequency adjustment can be adjusted. On-the-fly Frequency Adjustment is performed during training. While training is occurring, simply click the Tab button, then click the button letter associated for the band to be adjusted (d=Delta, t=Theta, a=Alpha, l=Lobeta, b=Beta, h=High Beta, g-Gamma, u=User).
6. **Digital Filter Amplitude Smoothing and Damping Factors Section** – Section where Global Smoothing Window and Text Damping Factor can be adjusted.
7. **Standard Settings Button** – Click to adjust all frequency bands to the default settings.
8. **ANI Settings Button** – Click to adjust all frequency bands to the standard LORETA settings.
9. **BrainDX Settings Button** – Click to adjust all frequency bands to the BrainDX Settings.
10. **qEEGPro Settings Button** – Click to adjust all frequency bands to the Default qEEGPro Settings.
11. **Loreta Settings Button** – Click to adjust all frequency bands to the ANI Settings.

Training Protocol Menu



1. **Frequency Training Section** – Section where you can set the training thresholds and type of training for all defined bands from the Frequency Bands Menu, for each of the defined Training Bands defined on either the Data Channels or Montage Info Menu. ***PLEASE NOTE:** If you use the "All Tab, this will define the training for that band on all defined Training Channels.
2. **Global Sustained Rewards Criterion Section** – Section to adjust the time where training conditions length must be met for a reward point and sound.
3. **Global Refractory Period Section** – Section to adjust the time the system will wait before another reward point can be rewarded.
4. **"Original" Sweet Spot Feedback Settings Section** – Section to turn on and off the "Original" Sweet Spot Feedback Settings. For more information, on the "Original" Sweet Spot Feedback Settings, click the About... Button.
5. **Markers Check Box** – Check Box that allows you to choose whether or not you would like to Mark the EEG whenever a reward is given.
6. **Points Counting Method Section** – Section to change between one or two counters for training. Visit www.brainm.com/kb/entry/111 for more information.
7. **Autoset Percent Section** – Section to set the percent time over threshold settings for the Go's, Stops and HiBeta(stop).
8. **Autothresholding Is: Section** – Section to turn on or off Autothresholding.
9. **Threshold Updating: Section** – Section where you can set the threshold updating options.
10. **Autothreshold Epoch Section** – Section where you can adjust the epoch to compute the autothreshold value.

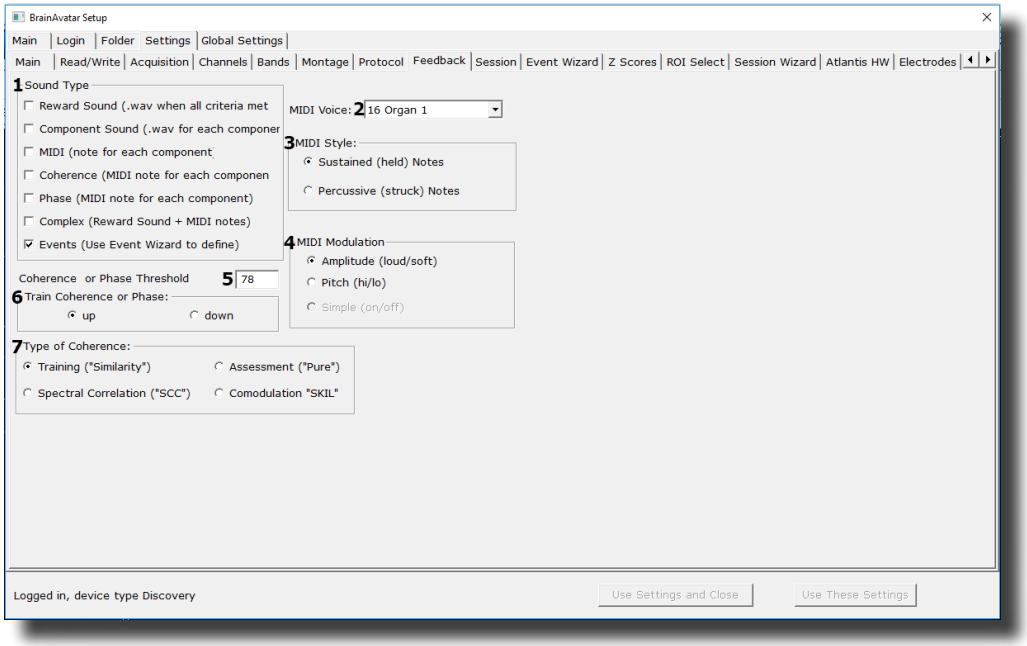
Display Options Menu



1. **Trainer Check Boxes** – Checkboxes to control what displays are active on each individual tab for the Training/Control Screen.
2. **Client Check Boxes** – Checkboxes to control what displays are active on each individual tab for the Client Screen.
3. **DLL Memory Mapping Mode Section** – Section where you can choose the DLL Memory Mapping Mode you are using.

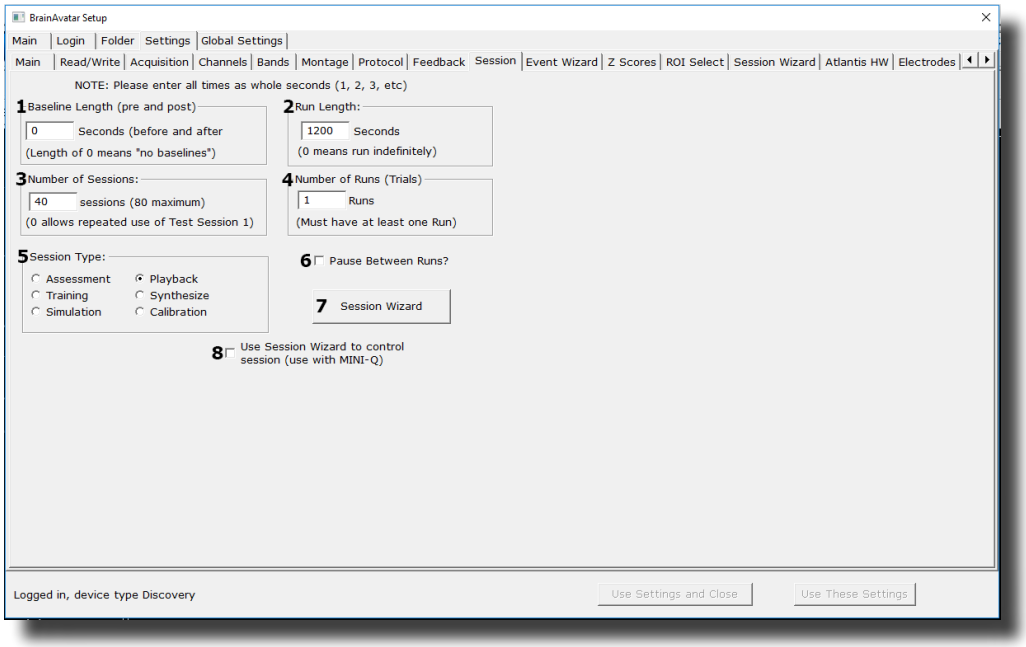
Software Screen Description

Feedback Control Menu



1. **Sound Type Section** – Section where you can choose the sound type for training ***PLEASE NOTE:** All Sounds can also either be turned on or off by clicking the Sound Tab of the Training/Control Screen.
2. **Midi Voice Section** – Section where you can choose the type of MIDI sound for feedback that utilizes MIDI Playback.
3. **MIDI Style Section** – Section where you can choose the MIDI Style for feedback that utilizes MIDI Playback.
4. **MIDI Modulation Section** – Section where you can choose the MIDI Modulation for feedback that utilizes MIDI Playback.
5. **Coherence or Phase Threshold Section** – Section where you can adjust the threshold for either Coherence or Phase training.
6. **Train Coherence or Phase Section** – Section where you can adjust the method of training for either Coherence or Phase training.
7. **Type of Coherence Section** – Section where you can choose the type of Coherence training.

Session Control Menu

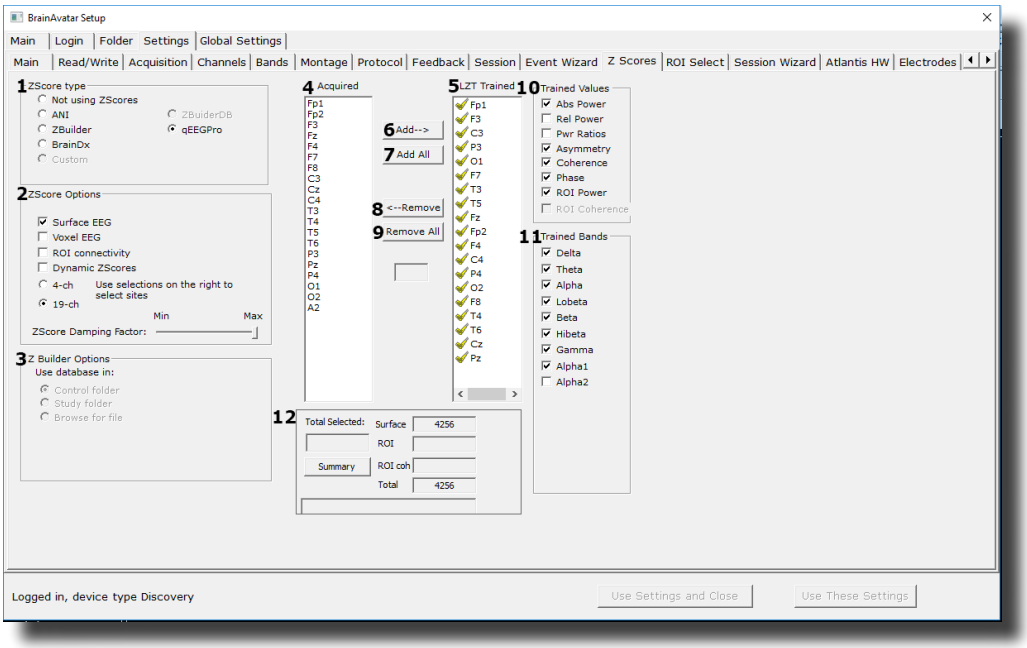


1. **Baseline Length Section** – Section where you can adjust the length of the pre and post Baseline.
2. **Run Length Section** – Section where you can adjust the length of the runs for the training session.
3. **Number of Sessions Section** – Section where you can adjust the amount of Sessions a particular training can be used for.
4. **Number of Runs Section** – Section where you can adjust the amount of runs for the training session.
5. **Session Type Section** – Section where you can change the type of session that is being used.
6. **Pause Between Runs? Check Box** – Click to choose whether or not you would like the training to pause at the end of a run.
7. **Session Wizard Button** – Click to enter the Session Wizard* Controls.
8. **Session Wizard to control session Check Box** – Used to control whether or not Session Wizard* is used for the training/assessment.

**Session Wizard is an optional purchase*

Software Screen Description

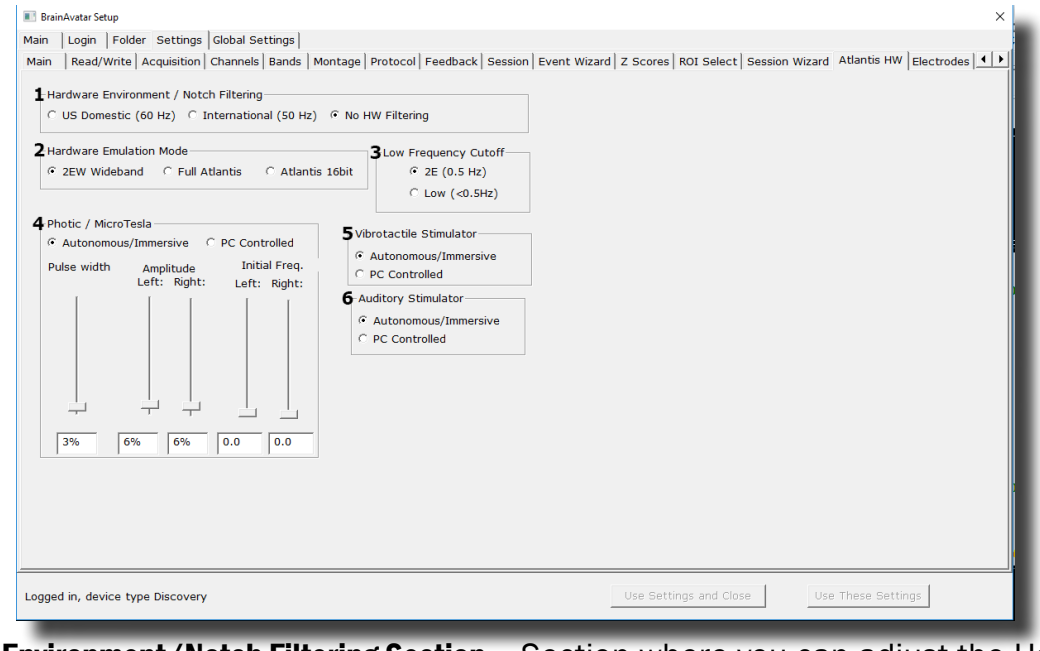
Z-Score Training Menu



1. **Z-Score* Type Section** – Section where you can choose the type of Z-Score* Training.
2. **Z-Score* Options Section** – Section where you can choose what type of Z-Score processing you would like to do, the damping factor on the Z-Score displays.
3. **Z Builder Options Section** – Section where you set up your information if you are using Brain-Master Z-Scores. This is where you would choose which Z-Builder file you use, as well as the settings for it.
4. **Acquired Section** – Section that displays what is being acquired from the Acquisition screen.
5. **LZT* Section** – Section where you set the sites to be LZT* Trained.
6. **Add⇨ Button** – Click to add the highlighted position from the Acquired Section.
7. **Add All Button** – Click to add all positions from the Acquired Section.
8. **⇦Remove Button** – Click to remove the highlighted position from the LZT* Section.
9. **Remove All Button** – Click to remove all positions from the LZT* Section.
10. **Trained Values Section** – Section that you can choose the trained values for the positions selected in the LZT section.
11. **Trained Bands Section** – Section that you can choose the trained bands for the positions selected in the LZT section.
12. **Summary Section** – Section where you can see the Total Number of Z-Scores being trained, as well as a detailed summary of all trained channels, bands cross frequencies, and ROI's

**Z-Score is an optional purchase*

Atlantis Hardware Control Menu

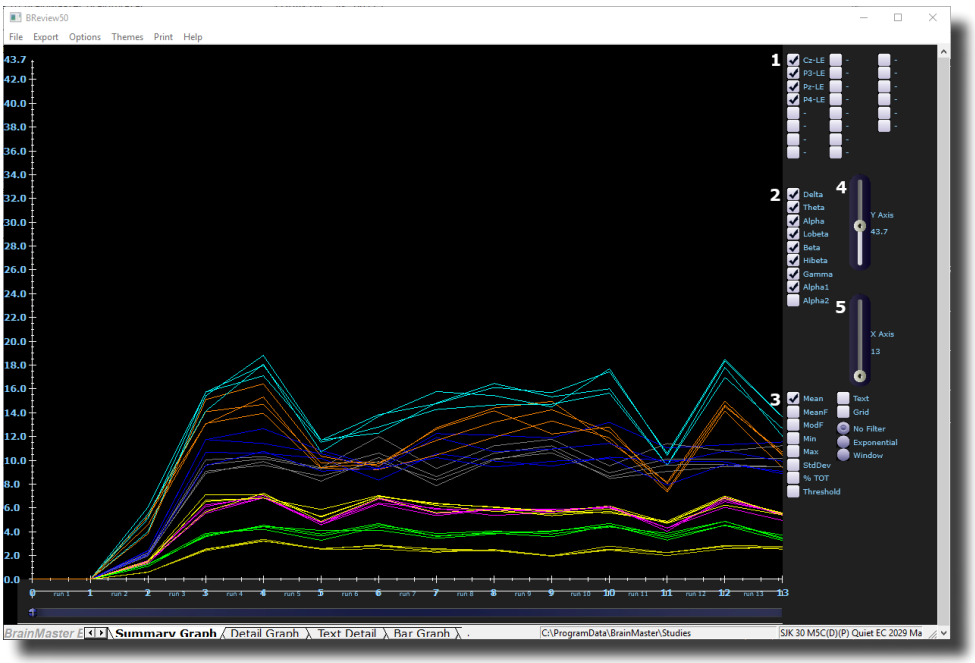


1. **Hardware Environment/Notch Filtering Section** – Section where you can adjust the Hardware Environment.
2. **Hardware Emulation Mode Section** – Section to adjust the Hardware Emulation.
3. **Low Frequency Cutoff Section** – Section to adjust the low frequency cutoff.
4. **Photic Stimulator* Section** – Section where you can adjust Photic/MicroTesla feedback.
5. **Auditory Stimulator Section** – Section where you can adjust auditory feedback.
6. **Vibrotactile Stimulator** Section** – Section where you can adjust vibrotactile feedback.

**PC Controlled Photic requires StimFlash. StimFlash is an optional purchase.*

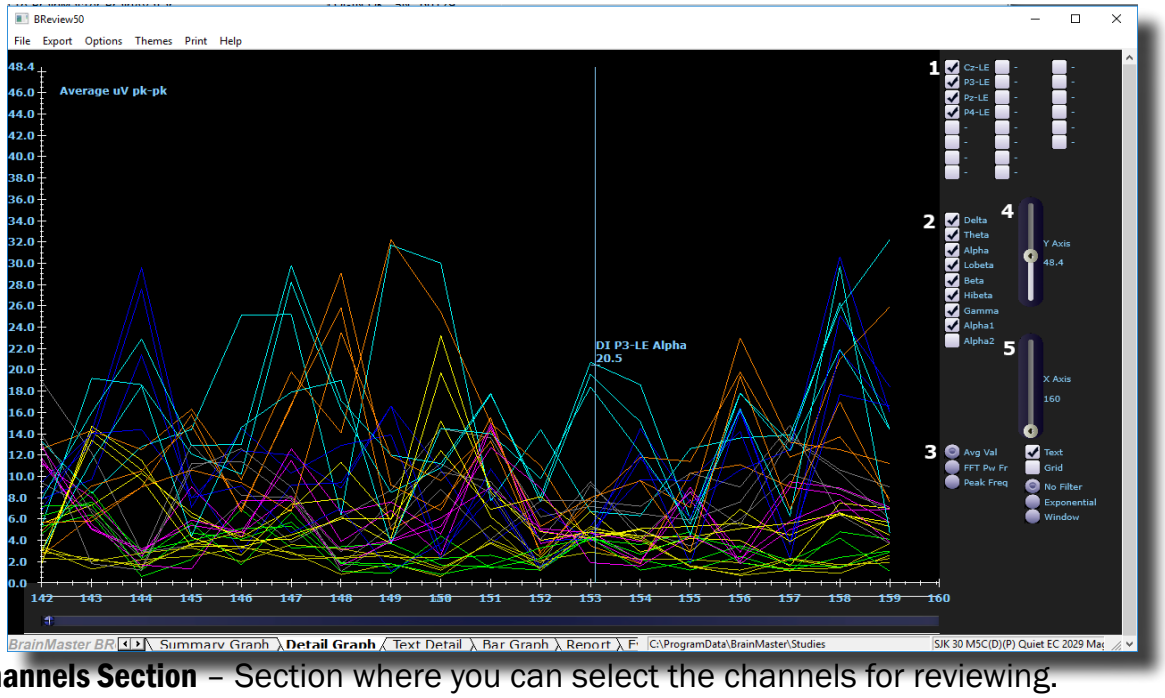
***PC Controlled Vibrotactile Stimulation requires InterActor software. InterActor software is an optional purchase.*

Review Session Results - Summary Graph



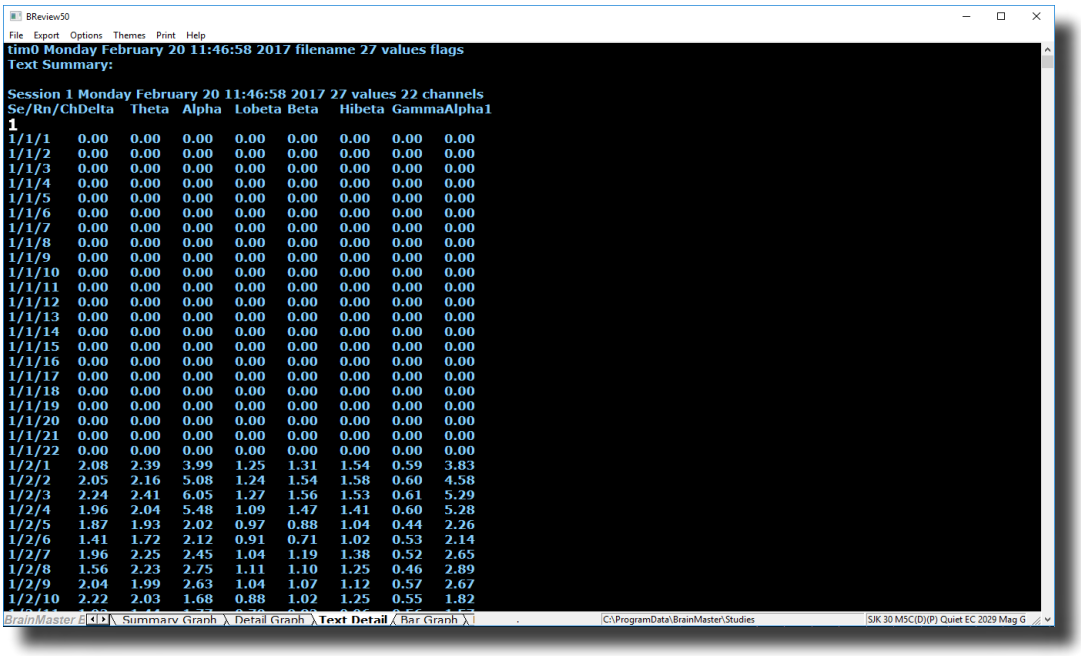
1. **Channels Section** – Section where you can select the channels for reviewing.
2. **Bands Section** – Section where you can select the bands for reviewing.
3. **Metrics Section** – Section where you can select different metrics for viewing, as well as ad-dtional viewing options on the graph itself.
4. **Y-Axis Control** – Control that allows you to adjust how much data is viewed on the Y-Axis of the graph.
5. **X-Axis Control** – Control that allows you to adjust how much data is viewed on the X-Axis of the graph.

Review Session Results - Detail Graph



1. **Channels Section** – Section where you can select the channels for reviewing.
2. **Bands Section** – Section where you can select the bands for reviewing.
3. **Metrics Section** – Section where you can select different metrics for viewing, as well as addtional viewing options on the graph itself.
4. **Y-Axis Control** – Control that allows you to adjust how much data is viewed on the Y-Axis of the graph.
5. **X-Axis Control** – Control that allows you to adjust how much data is viewed on the X-Axis of the graph.

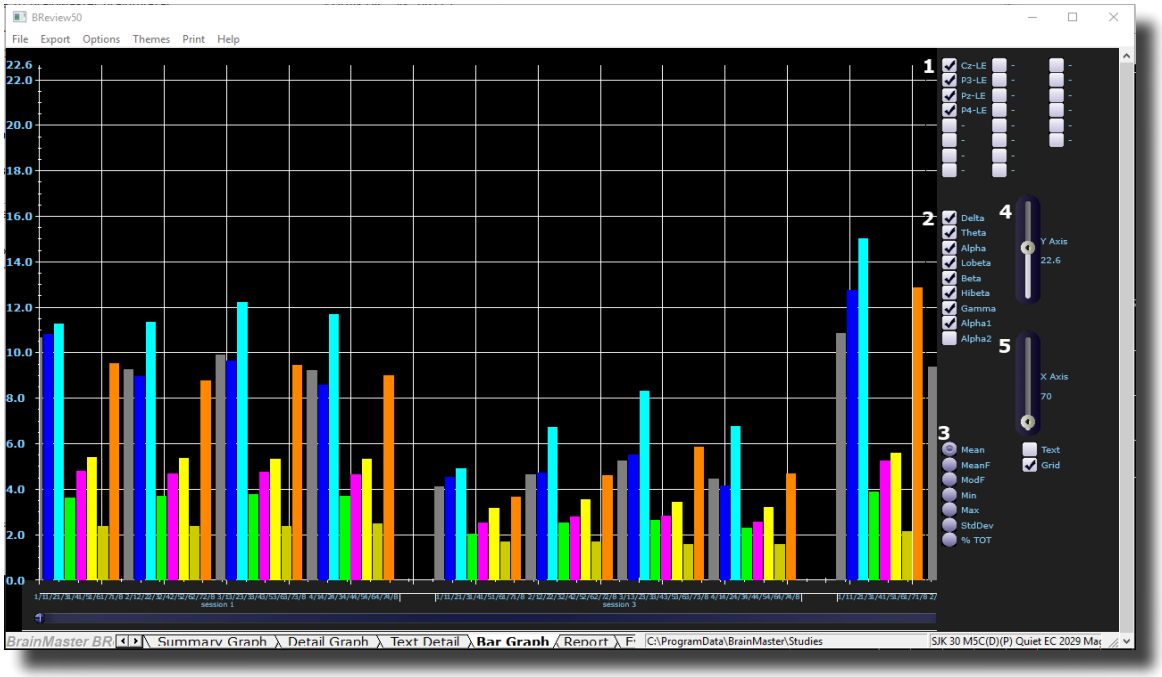
Review Session Results - Text Detail



Se/Rn/Ch	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma	Alpha1
1								
1/1/1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/1/22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/2/1	2.08	2.39	3.99	1.25	1.31	1.54	0.59	3.83
1/2/2	2.05	2.16	5.08	1.24	1.54	1.58	0.60	4.58
1/2/3	2.24	2.41	6.05	1.27	1.56	1.53	0.61	5.29
1/2/4	1.96	2.04	5.48	1.09	1.47	1.41	0.60	5.28
1/2/5	1.87	1.93	2.02	0.97	0.88	1.04	0.44	2.26
1/2/6	1.41	1.72	2.12	0.91	0.71	1.02	0.53	2.14
1/2/7	1.96	2.25	2.45	1.04	1.19	1.38	0.52	2.65
1/2/8	1.56	2.23	2.75	1.11	1.10	1.25	0.46	2.89
1/2/9	2.04	1.99	2.63	1.04	1.07	1.12	0.57	2.67
1/2/10	2.22	2.03	1.68	0.88	1.02	1.25	0.55	1.82

1. **Data Section** – Section that lists out the Average Amplitude separated by sessions, runs, and channels

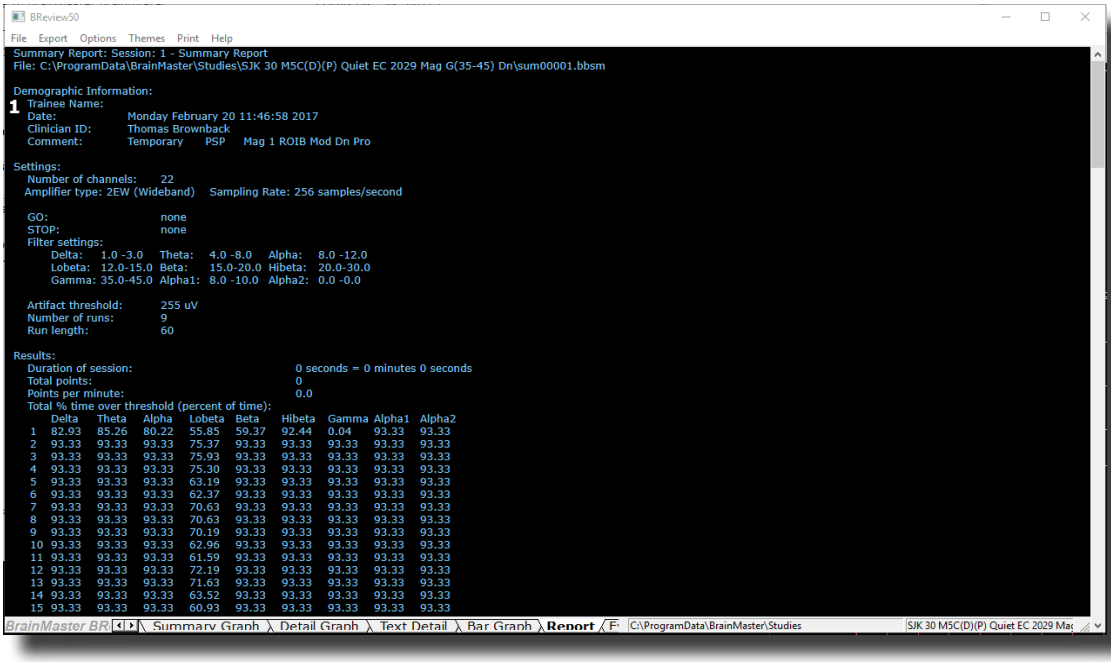
Review Session Results - Bar Graph



1. **Channels Section** – Section where you can select the channels for reviewing.
2. **Bands Section** – Section where you can select the bands for reviewing.
3. **Metrics Section** – Section where you can select different metrics for viewing, as well as addtional viewing options on the graph itself.
4. **Y-Axis Control** – Control that allows you to adjust how much data is viewed on the Y-Axis of the graph.
5. **X-Axis Control** – Control that allows you to adjust how much data is viewed on the X-Axis of the graph.

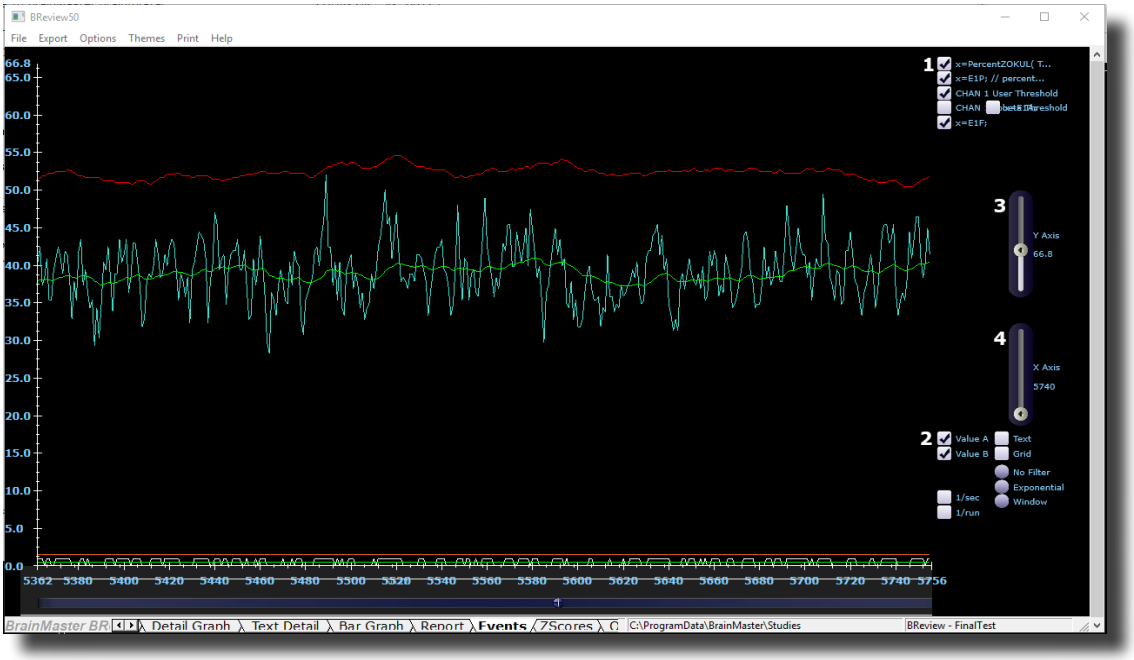
Software Screen Description

Review Session Results - Report



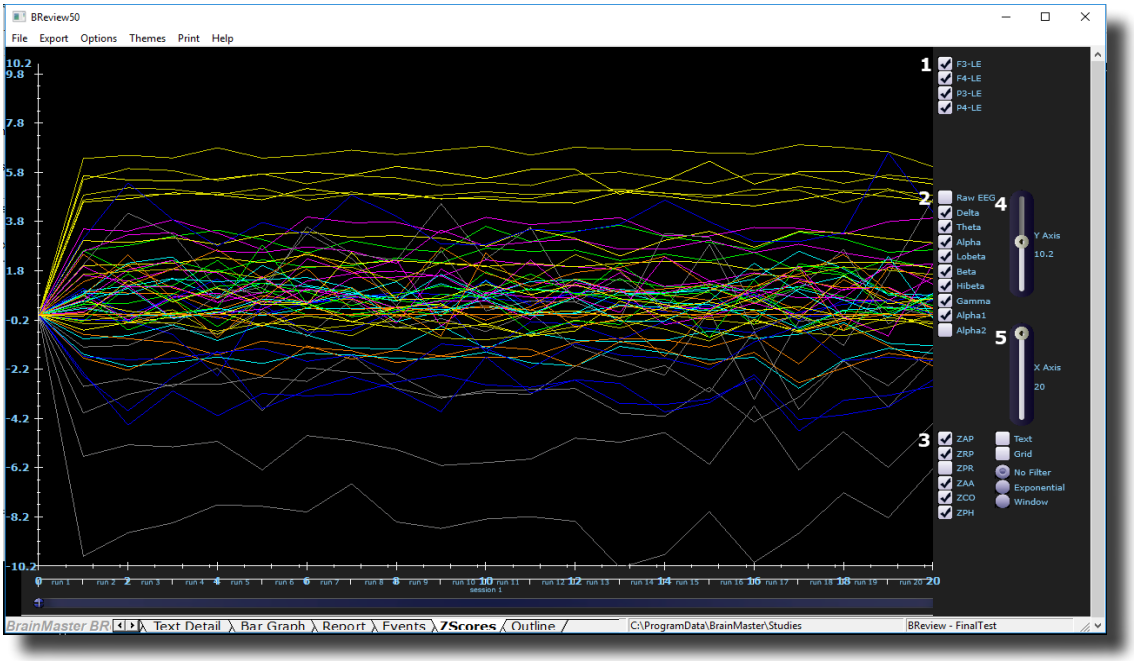
1. **Overview Section** – Section that gives an overview of the patient folder including date used, band information, basic training information, and average microvoltage of the bands

Review Session Results - Event Graph



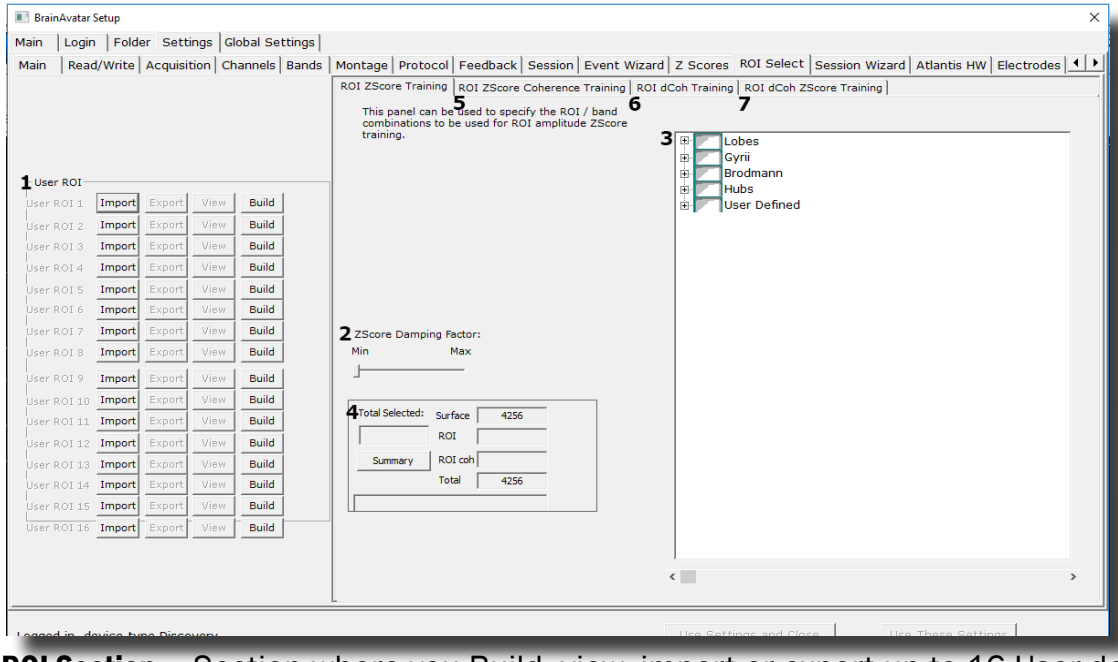
1. **Events Section** – Section where you can select the Events for reviewing.
2. **Metrics Section** – Section where you can select different metrics for viewing, as well as addtional viewing options on the graph itself.
3. **Y-Axis Control** – Control that allows you to adjust how much data is viewed on the Y-Axis of the graph.
4. **X-Axis Control** – Control that allows you to adjust how much data is viewed on the X-Axis of the graph.

Review Session Results - Z-Score Graph



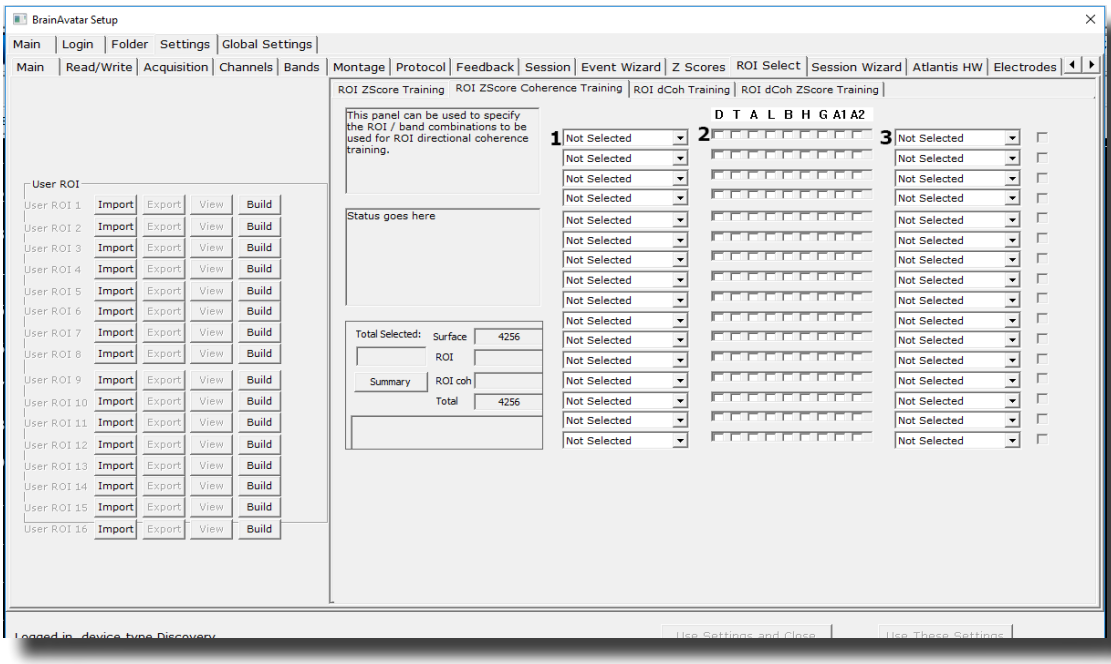
1. **Channels Section** – Section where you can select the channels for reviewing.
2. **Bands Section** – Section where you can select the bands for reviewing.
3. **Metrics Section** – Section where you can select different metrics for viewing, as well as addtional viewing options on the graph itself.
4. **Y-Axis Control** – Control that allows you to adjust how much data is viewed on the Y-Axis of the graph.
5. **X-Axis Control** – Control that allows you to adjust how much data is viewed on the X-Axis of the graph.

ROI Select - ROI Amplitude Z-Scores



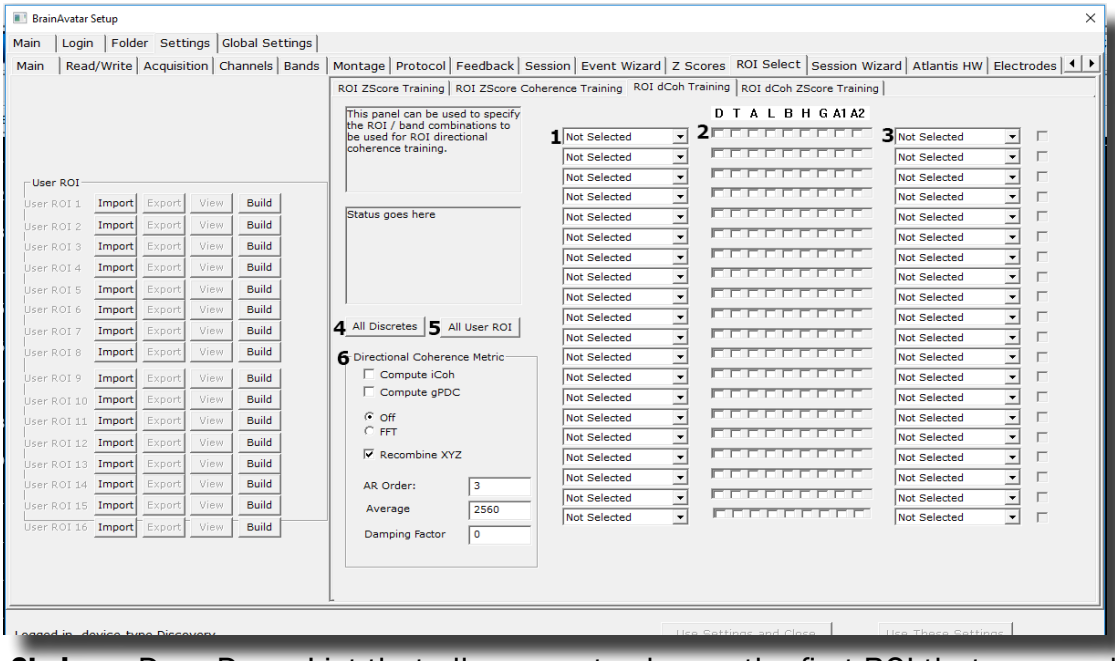
1. **User ROI Section** – Section where you Build, view, import or export up to 16 User-defined ROI's.*****PLEASE NOTE:** This menu is available for use on all Sub-Menus of the ROI Select Tab.
2. **Z-Score Damping Factor Section** – Section where you can control the Damping Factor for the ROI Amplitude Z-Scores.
3. **ROI Selection Section** – Section where choose the ROI's and their components for training.
4. **Summary Section** – Section where you can see the Total Number of Z-Scores being trained, as well as a detailed summary of all trained channels, bands cross frequencies, and ROI's *****PLEASE NOTE:** This menu is available for use on the ROI Z-Score Coherence Tab as well.
5. **ROI Z-Score Coherence Tab** – Tab that opens up the ROI Z-Score Coherence Tab. *****PLEASE NOTE:** This menu is available for use on all Sub-Menus of the ROI Select Tab.
6. **ROI dCoh Training Tab** – Tab that opens up the ROI Directional Coherence Training Tab. *****PLEASE NOTE:** This menu is available for use on all Sub-Menus of the ROI Select Tab.
7. **ROI dCoh Z-Score Training Tab** – Tab that opens up the ROI Directional Coherence Z-Score Training Tab. *****PLEASE NOTE:** This menu is available for use on all Sub-Menus of the ROI Select Tab.

ROI Select - ROI Coherence Z-Score



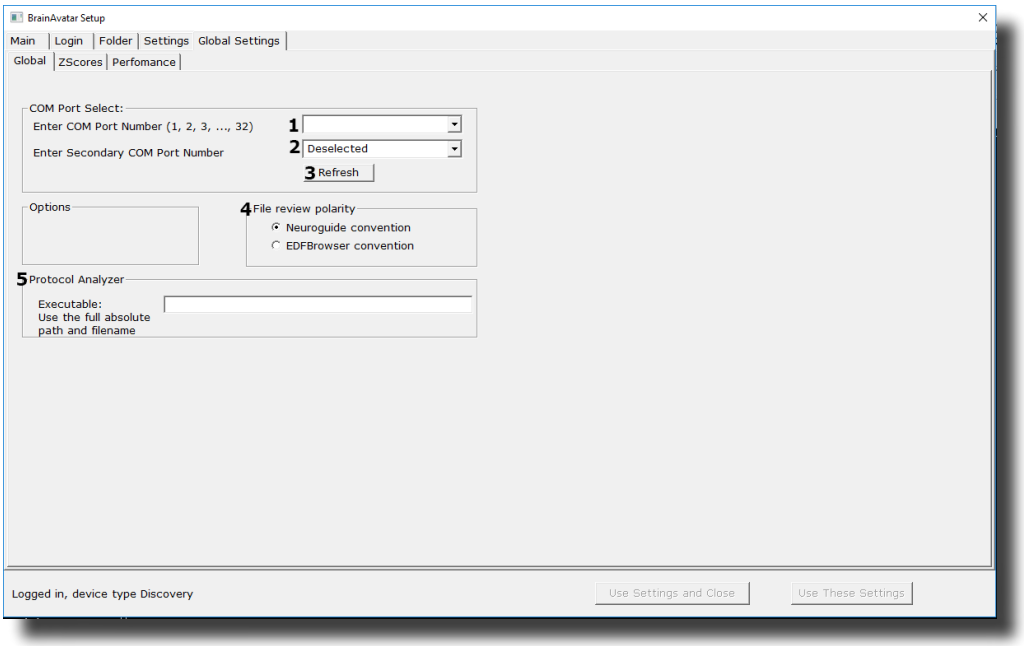
1. **ROI 1 Choice** – Drop-Down-List that allows you to choose the first ROI that you would like to use for Coherence
2. **Bands Check** – Check boxes to choose which bands to do training to
3. **ROI 2 Choice** – Drop-Down-List that allows you to choose the second ROI that you would like to use for Coherence

ROI Select - Dirctional Coherence Training



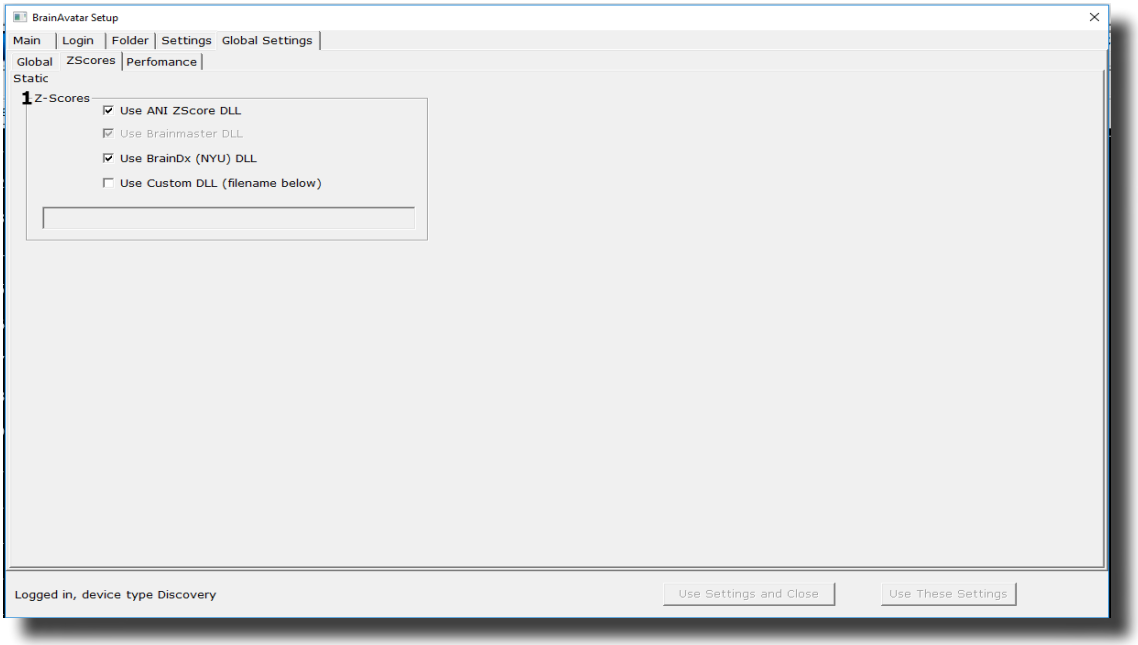
1. **ROI 1 Choice** – Drop-Down-List that allows you to choose the first ROI that you would like to use for Coherence.
2. **Bands Check** – Check boxes to choose which bands to do training to
3. **ROI 2 Choice** – Drop-Down-List that allows you to choose the second ROI that you would like to use for Coherence.
4. **All Discretes Button** – Button that automatically chooses all Discrete (Surface Sites) to be used for Directional Coherence Training.
5. **All User ROIs Button** – Button that automatically chooses all User-Defined ROI's that have been imported/Built to be used for Directional Coherence Training.
6. **Directional Coherence Metric Section** – Section to choose computation values for the Directional Coherence output.

Global Settings Menu



1. **Primary COM Port Select Dropdown** – Section in which you use the Drop-Down box to select the COM Port that your Main Device is on from a list of available open ports.
2. **Secondary COM Port Select Dropdown** – Section in which you use the Drop-Down box to select the COM Port that your Secondary Device is on from a list of available open ports. This is only used, if your Primary Device is a Discovery.
3. **Refresh Button** – Click refresh the available open ports. Use this, if you have changed the ports that are connected.
4. **File Review Polarity Options** – Choose to change the Polarity of displaying information on the Review Screen. The Default and recommended option is Neuroguide Convention

Z-Scores* Global Settings Menu



1. **Z-Score* Section** – Section where you can choose which Z-Score DLL will be used.

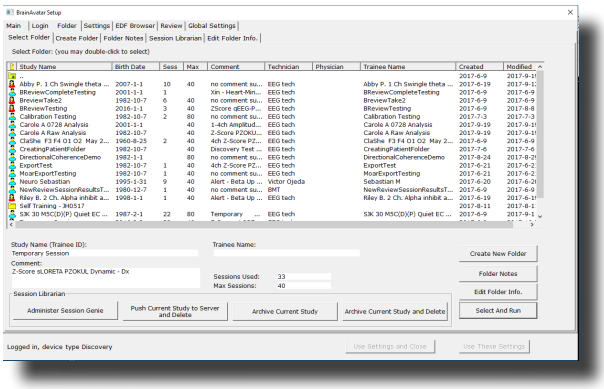
**Z-Score is an optional purchase*

Classic (Setup Menu) Method

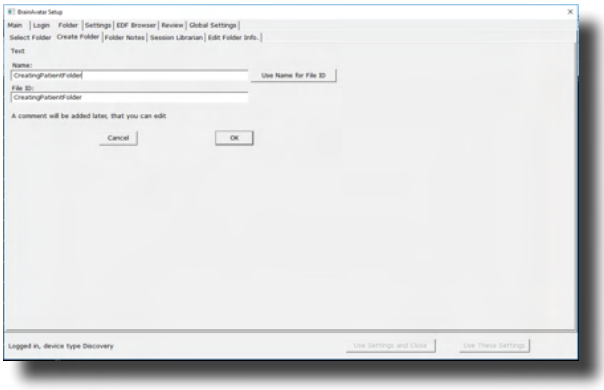
Creating a Trainee Folder

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

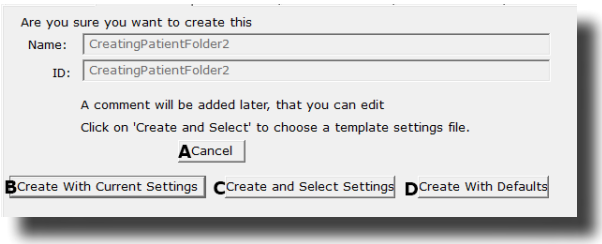
1. From the Main Tab, click the Folder Selection Button or the Folder Tab. This will bring you to the Select Folder screen. On this screen, click the Create New Folder Button or the Create Folder Tab to begin creating a new folder.



2. Type in the name that you would like, and the file ID for the folder in the proper fields. When naming the folder, use a numerical code that you will need to record in a confidential file.



3. Another screen will pop up to confirm the name of the folder. You have four options:



A. **Cancel creating the folder** – This will cancel creating this folder, and return you to the Select Folder Tab.

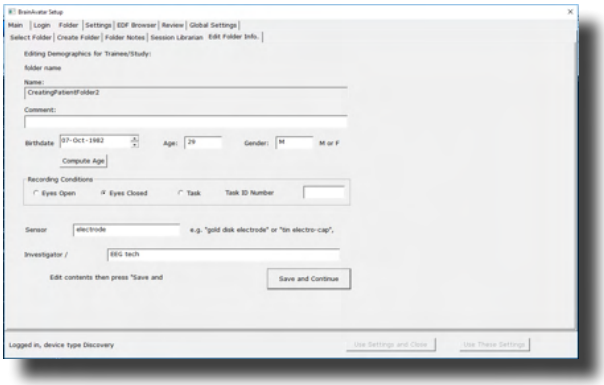
B. **Create the folder with the currently chosen settings** – This will load the last chosen settings file for this folder.

C. **Create the folder with default settings** – This option will use the default settings.

D. **Create the folder and select the settings** – This option allows you to choose either new settings(.bdb2) or old settings(.txt) If using this option, merely navigate to the setting file that you would like to use. ***PLEASE NOTE:** You will have to specify between the different file formats.

Choose which option you would like to continue.

4. The Edit Folder Info Screen will open. Fill out all information, and then click the Save and Continue Button.

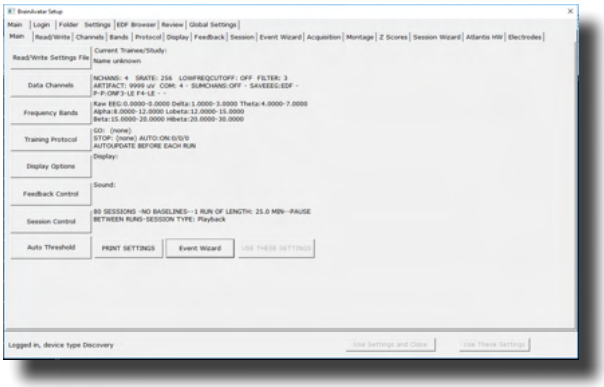


You have now created a folder for training.

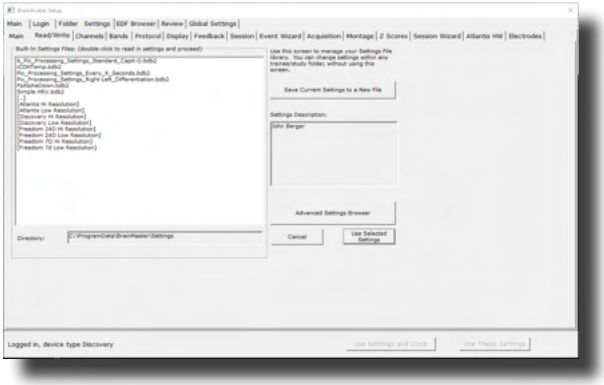
Changing to a new Settings Files

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

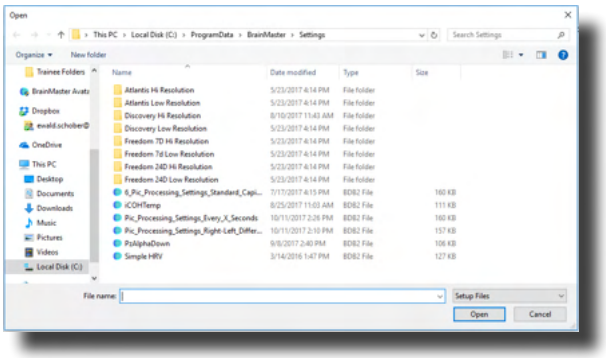
1. From the Main Screen, click the View or Change Settings Button or the Settings Tab. On the Setup Options Menu, click Read/Write Settings File Button or the Read/Write Tab to continue.



2. On the Read or Write Settings Menu, you can either utilize the menu, on the left. Or, you can click the Advanced Browser Button. If you use the menu, navigate through the folders (Identified with between []) to find the file that you would like to use, and click the Use Selected Button, the click Use Settings and Close Button. Or, if you click the Advanced Settings Browser Button, proceed to Step 3.



3. The following will open, so that you can find the BrainMaster Setting file(new or old) you would like. Highlight the Setting file that you would like to use, and click open to continue. After you have returned to the menu, click the Use Settings and Close Button. ***PLEASE NOTE: You will have to specify between the different file formats(bdb2 or txt).



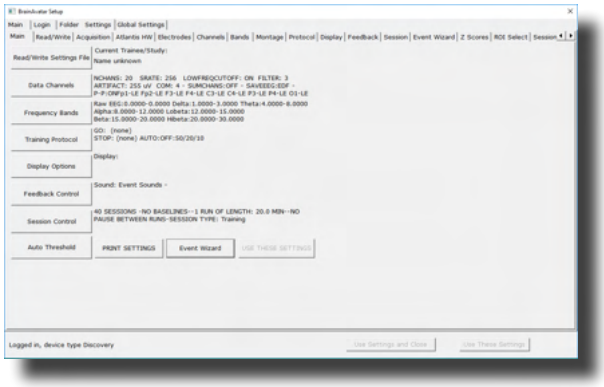
The settings for your Trainee folder have now been changed.

BrainAvatar Trainee Folders

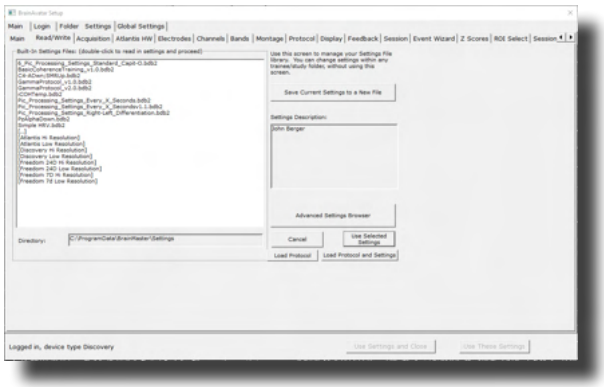
Creating a new Setting or updating a Settings File from a Patient's Settings Files

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

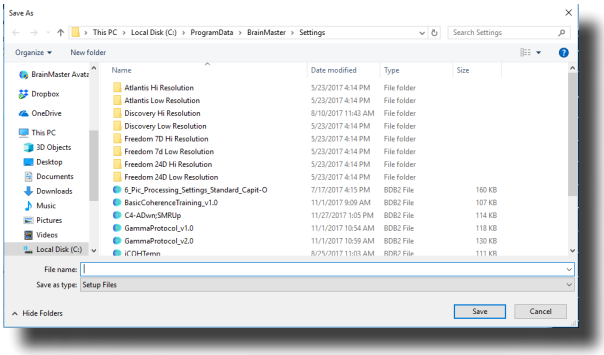
1. From the Main Screen, click the View or Change Settings Button or the Settings Tab. On the Setup Options Menu, click Read/Write Settings File Button or the Read/Write Tab to continue.



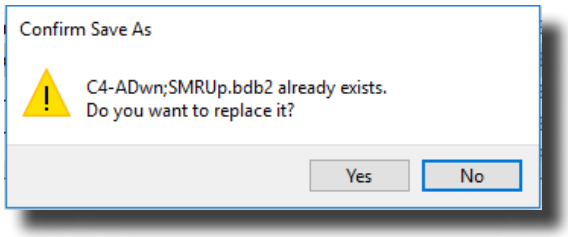
2. On the Read or Write Settings File Menu, click the click Save Current Settings to a New File Button to continue.



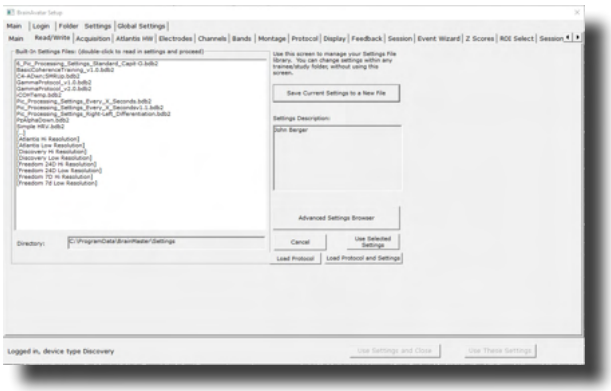
3. The following will open, so that you can find the BrainMaster Setting file you would like. Highlight the Setting file that you would like to change, or simply type in the File Name that you would like the Settings file to contain. Click the Save Button to continue.



4. If you are saving over an existing settings file, you will have to confirm the replacement of the file. Click the Yes Button to continue.



The settings have now been changed with the adjustments you have added, or a new settings file has been created with your settings.

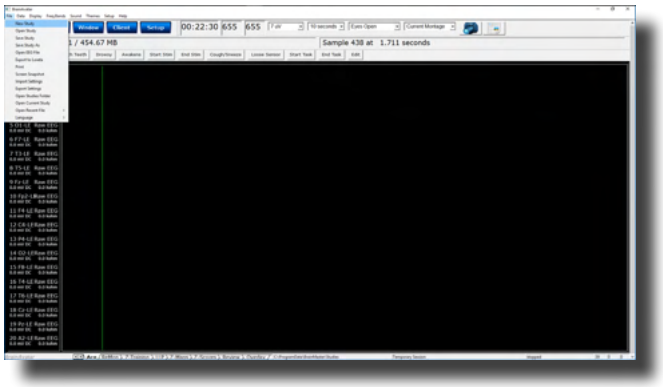


Training Screen Method

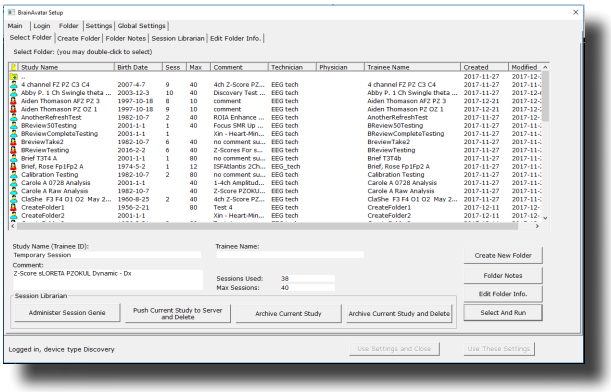
Creating a Trainee Folder

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

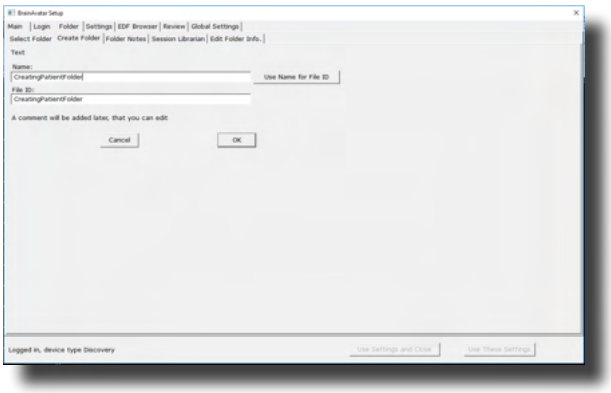
1. From the Training Screen, Click the File Tab, then New Study.



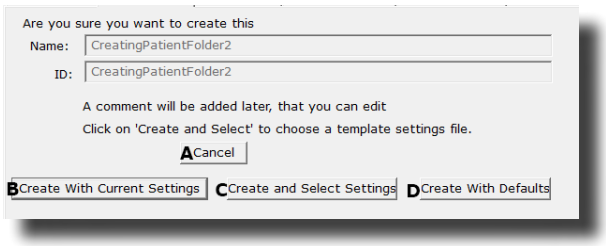
2. This will bring you to the Select Folder screen. On this screen, click the Create New Folder Button or the Create Folder Tab to begin creating a new folder.



3. Type in the name that you would like, and the file ID for the folder in the proper fields. When naming the folder, use a numerical code that you will need to record in a confidential file.



4. Another screen will pop up to confirm the name of the folder. You have four options:



A. **Cancel creating the folder** – This will cancel creating this folder, and return you to the Select Folder Tab.

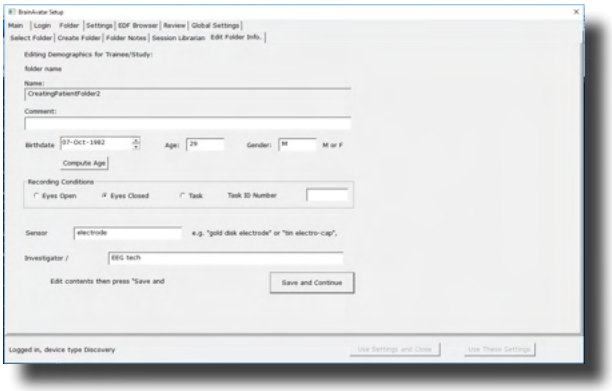
B. **Create the folder with the currently chosen settings** – This will load the last chosen settings file for this folder.

C. **Create the folder with default settings** – This option will use the default settings.

D. **Create the folder and select the settings** – This option allows you to choose either new settings(.bdb2) or old settings(.txt) If using this option, merely navigate to the setting file that you would like to use. ***PLEASE NOTE:** You will have to specify between the different file formats.

Choose which option you would like to continue.

5. The Edit Folder Info Screen will open. Fill out all information, and then click the Save and Continue Button.

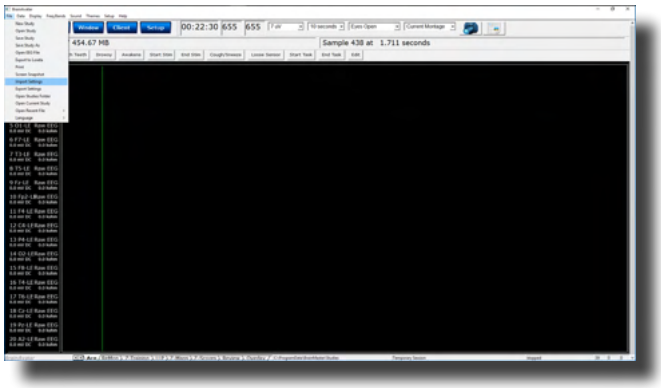


You have now created a folder for training.

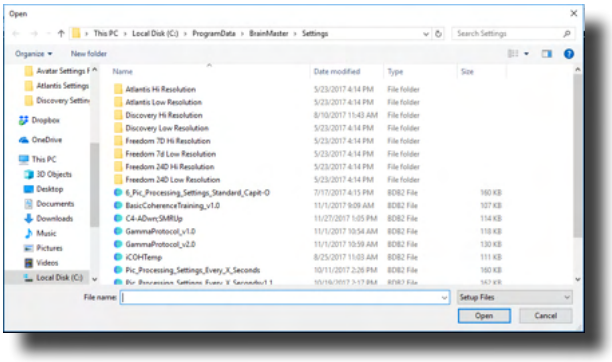
Changing to a new Settings Files

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

1. From the Training Screen, click the File Tab and then click Import Settings.



2. The following will open, so that you can find the BrainMaster Setting file(new or old) you would like. Highlight the Setting file that you would like to use, and click open to continue.
   ***PLEASE NOTE:** You will have to specify between the different file formats(bdb2 or txt).

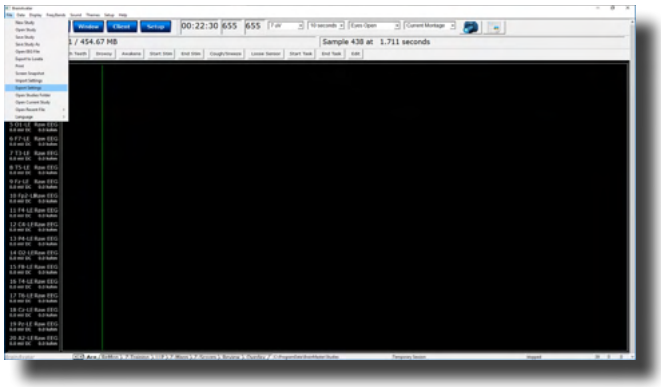


The settings for your Trainee folder have now been changed.

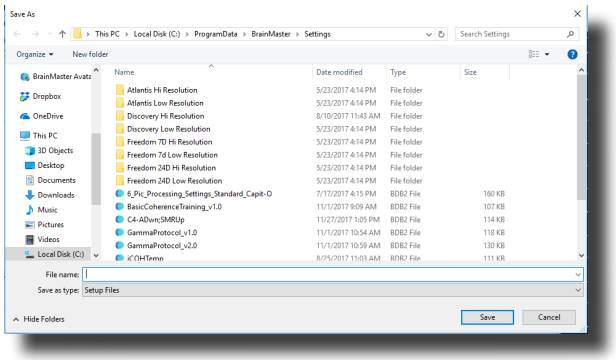
Creating a new Setting or updating a Settings File from a Patient's Settings Files

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

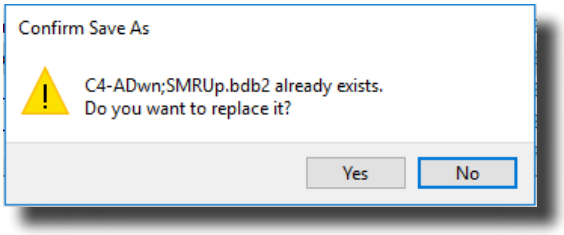
1. From the Training Screen, click the File Tab and then click Export Settings.



2. The following will open, so that you can find the BrainMaster Setting file you would like. Highlight the Setting file that you would like to change, or simply type in the File Name that you would like the Settings file to contain. Click the Save Button to continue.



3. If you are saving over an existing settings file, you will have to confirm the replacement of the file. Click the Yes Button to continue.



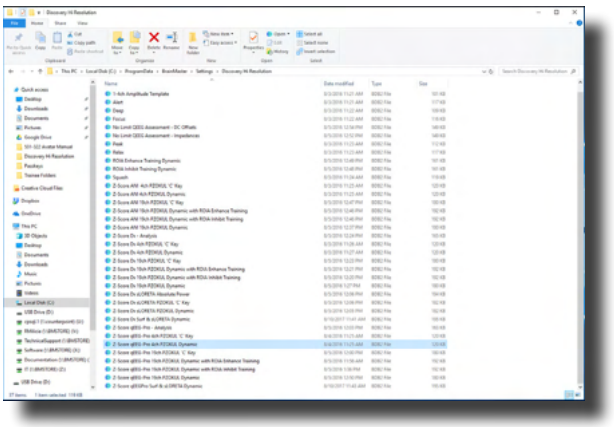
The settings have now been changed with the adjustments you have added.

Outside of BrainAvatar Software (File Explorer)

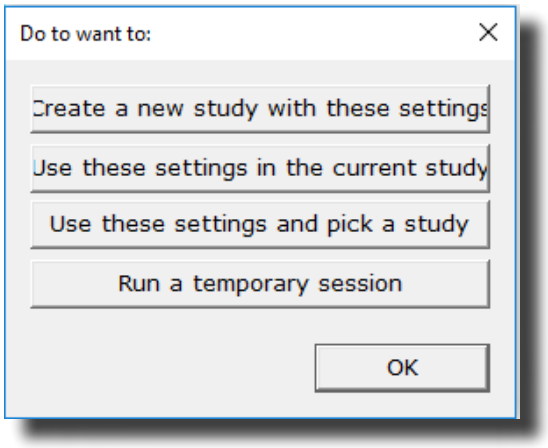
Creating a Trainee Folder

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

1. Locate the .bdb2 file that you would like to use for your training. When you find this, file double-click.



2. The following screen will appear, asking what you would like to do. There are 4 options:



a. **Create a new study with these settings –** This will bring you to the Create Folder Tab, so that you can create a new folder.

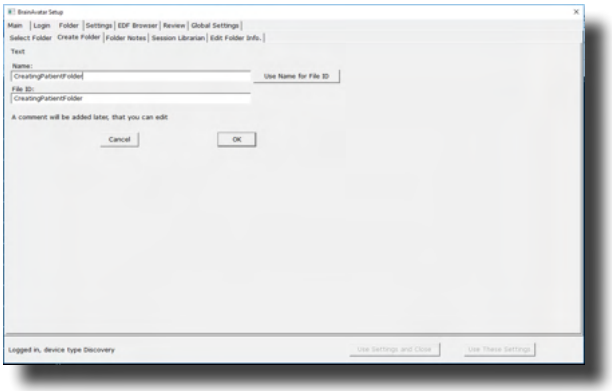
b. **Use these settings in the current study –** This will automatically load these settings into the Study Folder that you last ran a session with, and will open the software to this Study Folder

c. **Use these settings and pick a study –** This option will allow you to pick a Study folder that you would like to load this into. After you have picked, it will open the software to this Study Folder.

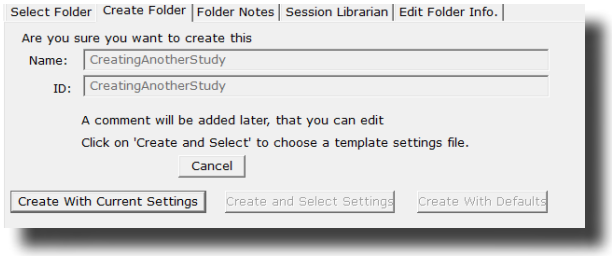
d. **Run a temporary session –** This will load the settings into a Study Folder named Temporary Session, and will open the software to this Study Folder.

To create a new folder, click Create a new study with these settings.

3. Type in the name that you would like, and the file ID for the folder in the proper fields. When naming the folder, use a numerical code that you will need to record in a confidential file.



4. The following screen will appear. This will be slightly different than if you created a folder inside of the software. As opposed to 4 options as normal, you will only have 2 options:

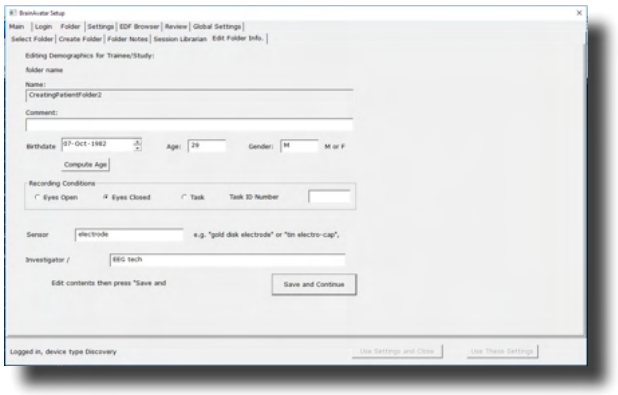


a. **Cancel creating the folder –** This will cancel creating this folder, and return you to the Select Folder Tab.

b. **Create With Current Settings –** This will load the last chosen settings file for this folder. This is the only option available, as you have already chosen the Settings protocol that you would like to have loaded.

To continue, click option b.

5. The Edit Folder Info Screen will open. Fill out all information, and then click the Save and Continue Button.

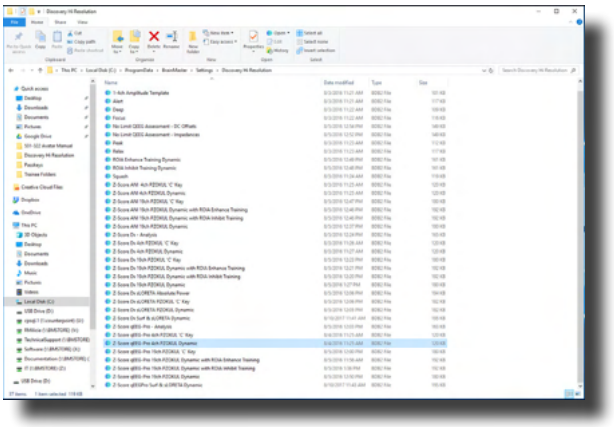


You have now created a folder for training.

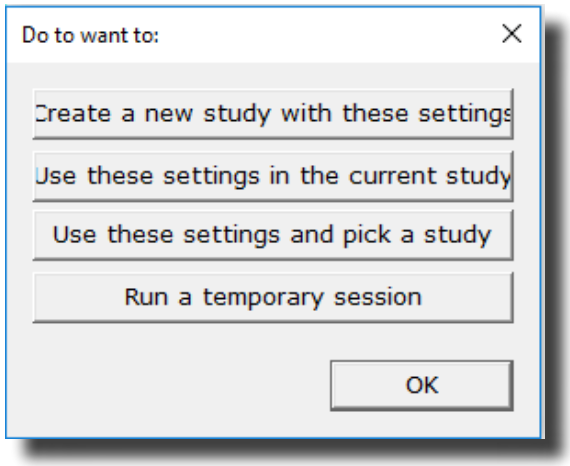
Changing to a new Settings Files

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

1. Locate the .bdb2 file that you would like to use for your training. When you find this, file double-click.



2. The following screen will appear, asking what you would like to do. There are 4 options:



   a. **Create a new study with these settings –** This will bring you to the Create Folder Tab, so that you can create a new folder.

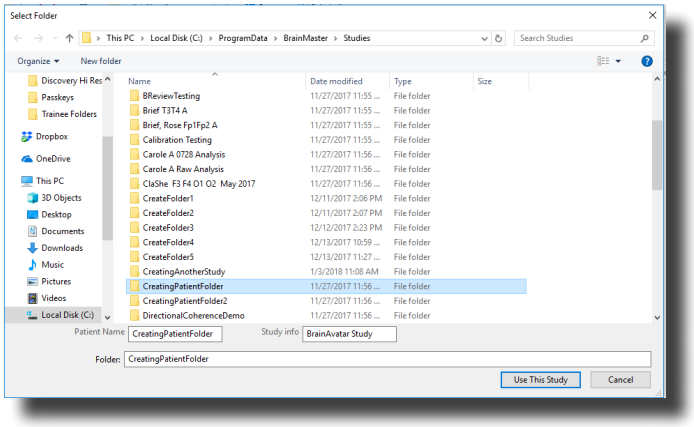
   b. **Use these settings in the current study –** This will automatically load these settings into the Study Folder that you last ran a session with, and will open the software to this Study Folder

   c. **Use these settings and pick a study –** This option will allow you to pick a Study folder that you would like to load this into. After you have picked, it will open the software to this Study Folder.

   d. **Run a temporary session –** This will load the settings into a Study Folder named Temporary Session, and will open the software to this Study Folder.

If you want to change the settings in the Patient Folder that the software is currently using, click Use thes settings in teh current Study. If you want to change the settings of a specific folder, click Use these setttngs adn pick a study, and move to step 3.

3. Use the following screen to select the Patient Folder that you would like to load your settings into. Highlight the Patient file, and click the Use This Study Button, or Double-click the folder to continue.

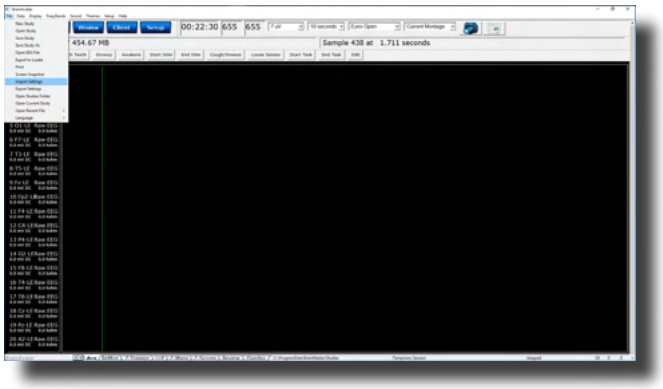


The settings file will now be loaded into the Study Folder that you have selected.

***PLEASE NOTE:** You cannot change settings to a settings file outside of the BrainAvatar Software.

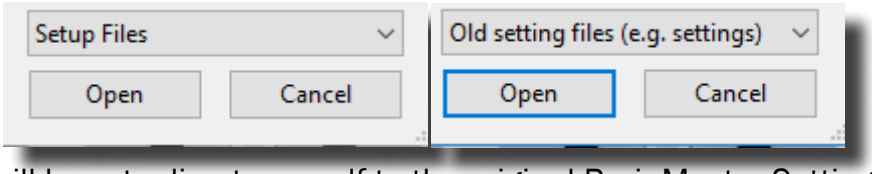
Walkthrough Guide: How to convert a Settings File from either the BrainMaster 3.0 Series Software or Discovery Series Software into the BrainAvatar 4.0 Series Software

1. From the Training Screen, Click the File Tab, then Import Settings.

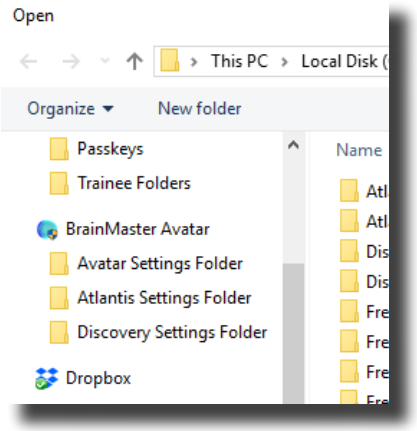


2. You will have to do two things from here:

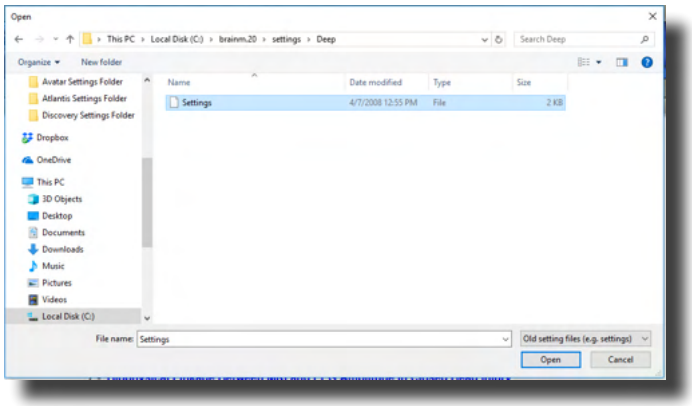
   A. First, you will have to switch the type of files that you are looking for from “Setup Files”, to “Old settings file (e.g. settings)”.



   B. Next, you will have to direct yourself to the original BrainMaster Settings Directory that you would like to move the settings from. This can be done by using the scroll bar on the left to move to the top of the extras bar, and choose the BrainMaster Settings Directory that best suits your needs.

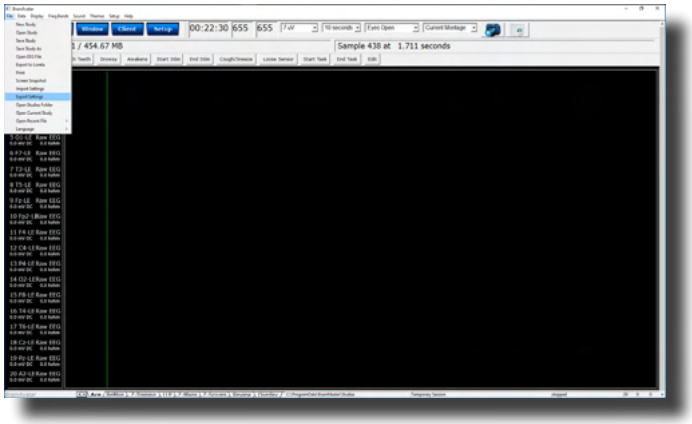


C. After directing yourself to the directory that you would like to choose for your settings file, from the directory on your right, find the protocol folder that best suits your needs, and choose this by double-clicking on it. Then, double-click on the “settings” file that appears next.

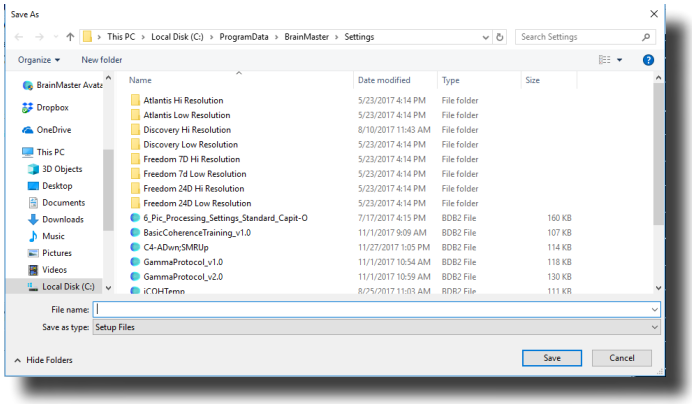


*****PLEASE NOTE:** You have now imported the Settings file to be used for **THIS STUDY FOLDER ONLY! IF YOU WANT TO CONVERT THE PROTOCOL TO BE USED EASILY FOR FUTURE STUDIES:**

3. From the Training Screen, Click the File Tab, then Export Settings.



4. When you save the file you can either save this over an existing file. Or, you can name it as a new file. Once this is completed, click the Save Button in the bottom-right hand corner of this screen.



You have now converted a BrainMaster 2.5, 3.0, or Discovery Settings file to be used as a Setting File for the BrainAvatar Software. You will be able to tell this, as this will now be listed in your BrainAvatar Settings files.

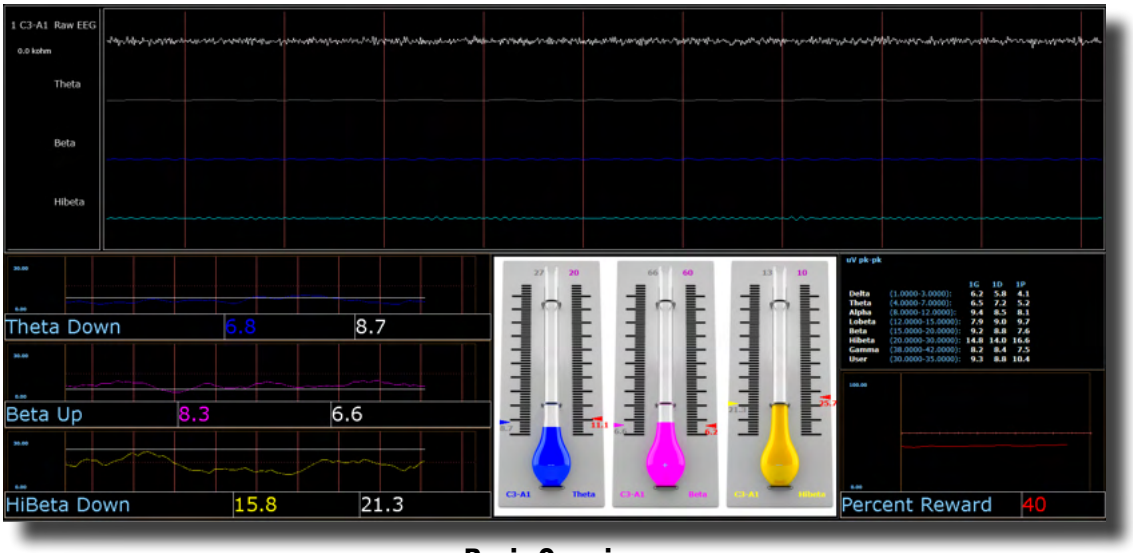
***PLEASE NOTE:** This protocol will have very little displays on the screen. To learn more about customizing displays, please see in the Panel Wizard Section.

Basic Settings Protocols Information

Protocol	Training	Default Location(s)
Alert	Theta & Hibeta Inhibited, Beta Rewarded with a reward tone when all criteria is met	C3
Deep	Alpha & Theta with Reward each band with its own reward tone	Pz
Focus	Theta & Hibeta Inhibited, Lobeta Rewarded with a reward tone when all criteria is met	C4
Peak	Alpha Coherence Training to reward with a MIDI tone when the coherence is above the threshold	O1, O2
Relax	Theta & Hibeta Inhibited, Alpha Rewarded with a MIDI reward tone when all criteria is met	C4
Squash	Wideband Single inibit that rewards with a MIDI tone when the criteria is met	Cz
ROI Training Only Head Select Enhance	Single Band Reward based on the band and location selected using the 3D Head Map with a reward tone when the criteria is met	All 10/20 Sites
ROI Training Only Head Select Inhibit	Single Band Inhibit based on the band and location selected using the 3D Head Map with a reward tone when the criteria is met	All 10/20 Sites
Z-Score PZOK 4ch	Trains the percentage of Z-Scores that are falling between +/- your defined range, rewards with a MIDI tone when above your defined Threshold	C3, C4, P3, P4
Z-Score PZOKUL 4ch	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above your defined Threshold	C3, C4, P3, P4
Z-Score PZOKUL 4ch Dynamic	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above the Dynamic Threshold	C3, C4, P3, P4
Z-Score PZOK 19ch	Trains the percentage of Z-Scores that are falling between +/- your defined range, rewards with a MIDI tone when above your defined Threshold	All 10/20 Sites
Z-Score PZOKUL 19ch	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above your defined Threshold	All 10/20 Sites
Z-Score PZOKUL 19ch Dynamic	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above the Dynamic Threshold	All 10/20 Sites
Z-Score Using sLORETA Z Absolute Power	Single Band sLORETA Z-Score Absolute Power based on the band and location selected using the 3D Head Map with a MIDI tone when the value falls between the upper and lower range	All 10/20 Sites
Z-Score Using sLORETA PZOKUL	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above your defined Threshold	All ROI's All Bands
Z-Score Using sLORETA PZOKUL Dynamic	Trains the percentage of Z-Scores that are falling between your upper and lower range, rewards with a MIDI tone when above the Dynamic Threshold	All ROI's All Bands

Basic Settings Protocols Crib Notes

Alert – Beta Up Theta and Hibeta Down



Basic Overview

Alert is known more generally as beta training. It consists of a reward on increasing beta, with inhibits placed on theta and hibeta. This protocol is generally applied at C3. When all criteria are met for 500 milli-seconds the trainee will get a reward tone (.wav)

Default Settings

Threshold Updating is set to autoupdate repeat: after pre-baseline and after each run. This protocol is set to update 10 times, every 120 seconds (20 minute session).

Percent Time over Threshold Hot Keys

't' increase Theta – 'Shift T' to decrease Theta

'b' increase Beta – 'Shift B' to decrease Beta

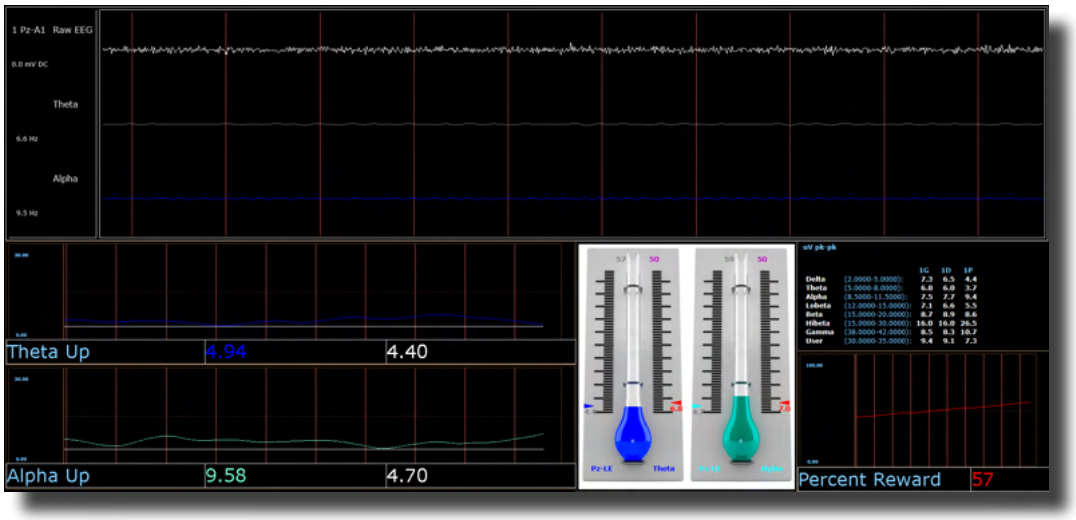
'h' increase Hibeta – 'Shift H' to decrease Hibeta

Note: 'y' key can be used to manually update at any time

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

***PLEASE NOTE:** All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Deep – Theta Alpha Up



Basic Overview

Deep is known as alpha/theta trainng. It consists of a reward on increasing alpha and theta. This protocol is generally applied at Pz. When each band criteria is met for 500 milliseconds the trainee will get a reward tone for each band.

Default Settings

Threshold Updating is set to autoupdate repeat: after pre-baseline and after each run. This protocol is set to update 10 times every 180 seconds (30 minute session).

Percent Time over Threshold Hot Keys

't' increase Theta – 'Shift T' to decrease Theta

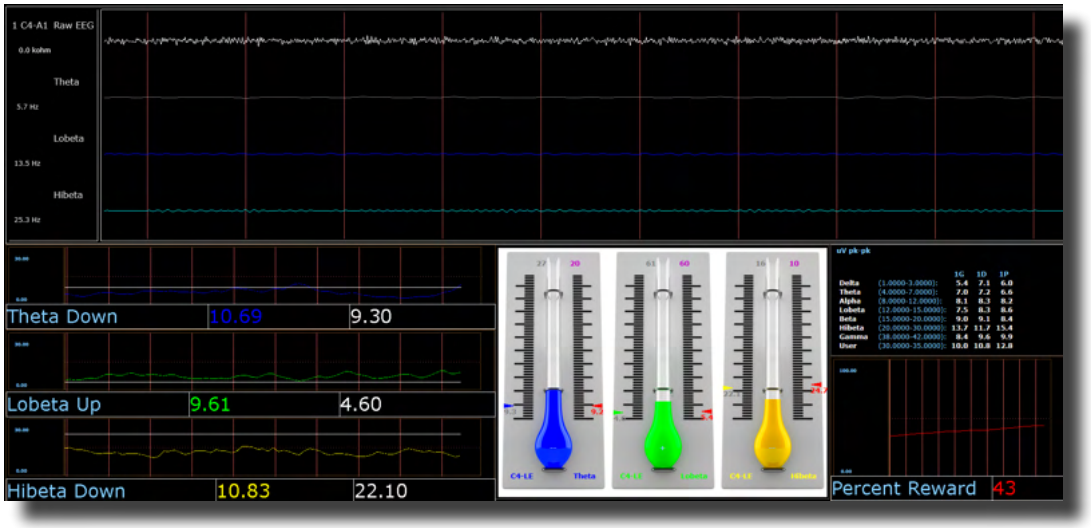
'a' increase Alpha – 'Shift A' to decrease Alpha

Note: 'y' key can be used to manually update at any time

This protocol is set up to work with
EEG Audio, BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games (e.g. InnerTube, Particle Editor, Zukor)

***PLEASE NOTE:** All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Focus – Lobeta Up Theta and Hibeta Down



Basic Overview

Focus is known more generally as beta training. It consists of a reward on increasing lobeta, with inhibits placed on theta and hibeta. This protocol is generally applied at C4. When all criteria are met for 500 milli-seconds the trainee will get a reward tone (.wav)

Default Settings

Threshold Updating is set to autoupdate repeat: after pre-baseline and after each run. This protocol is set to update 10 times every 120 seconds (20 minute session).

Percent Time over Threshold Hot Keys

't' increase Theta – 'Shift T' to decrease Theta

'l' increase Lobeta – 'Shift L' to decrease Lobeta

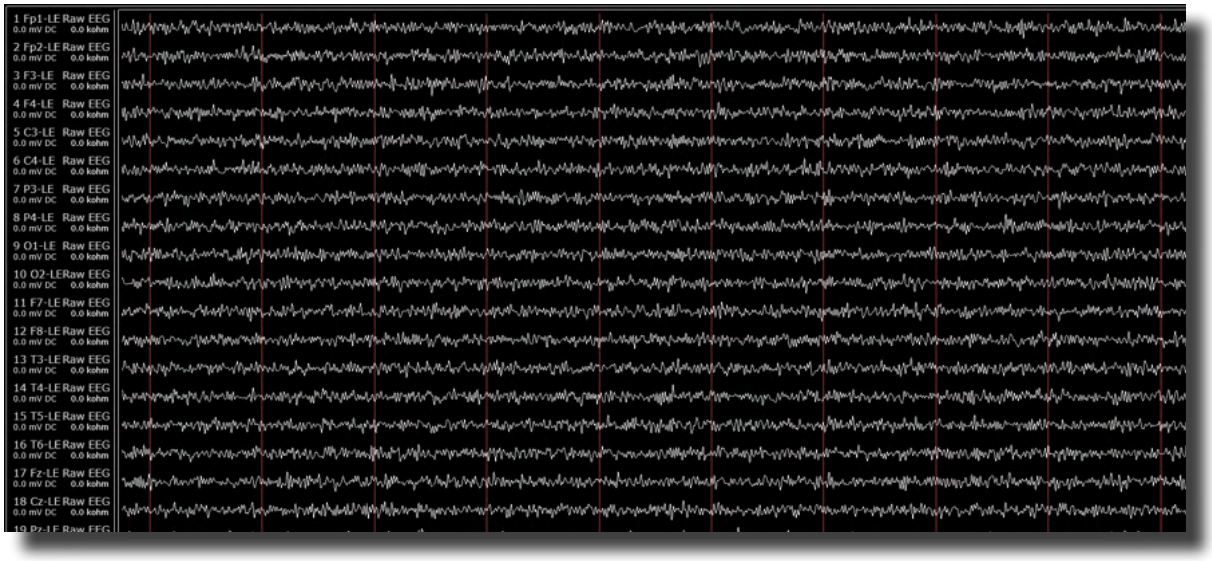
'h' increase Hibeta – 'Shift H' to decrease Hibeta

Note: 'y' key can be used to manually update at any time

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

PLEASE NOTE: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

No Limit QEEG Assessment



Basic Overview

The No Limit QEEG Assessment file is acquiring the standard sensor positions defined by the 10-20 system. The recording condition can be changed on the fly from the condition drop down menu at the top of the BrainAvatar window. Each time the condition is changed from the drop down menu a new EDF is created.

The observed offset values on the acquisition screen in BrainAvatar software is generally useful for assessing sensor connection quality

Recommended DC Offsets Values

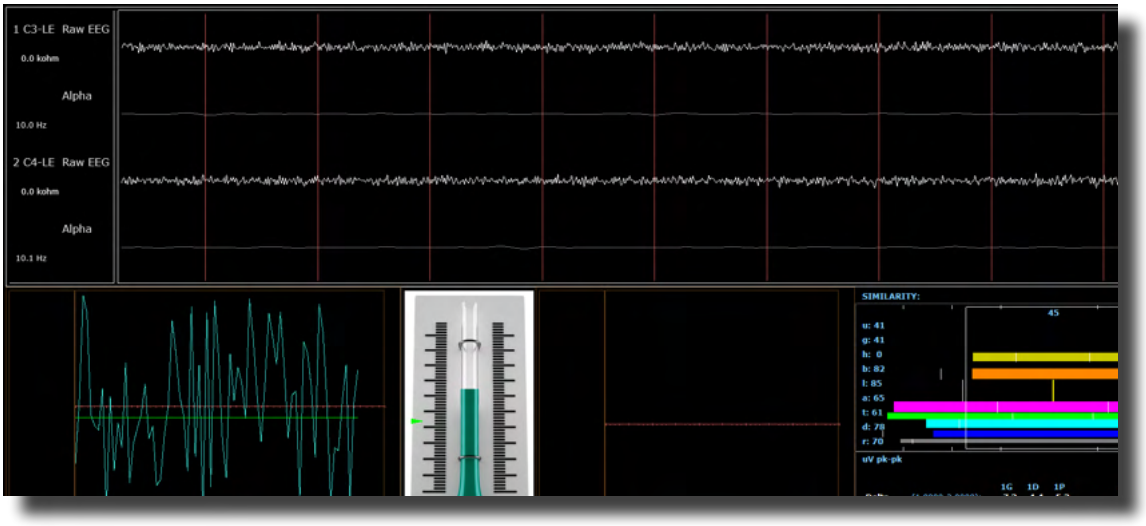
Gold - 50 Millivolts
Tin - 30 Millivolts
Silver/ Silver Chloride - 10 Millivolts

Recommended Impedance Values (Optional add-on)

0-5 kohm – White
5-10 kohms – Green
10-15 kohm – Yellow
15> kohm – Red

PLEASE NOTE: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Peak – Alpha Coherence Up



Basic Overview

Peak is a more specific type of alpha training. Peak's goal is achieving a coherent state between the left and right hemispheres in the alpha band (8-12 Hz). Eyes are generally closed when using the 'peak' protocol. This protocol is generally applied at C3 and C4. When the alpha coherence is above the training threshold the trainee will get an event sound (MIDI Tone).

Default Settings

Protocol is **not** set to autothreshold, and session is set to run for 20 minutes.

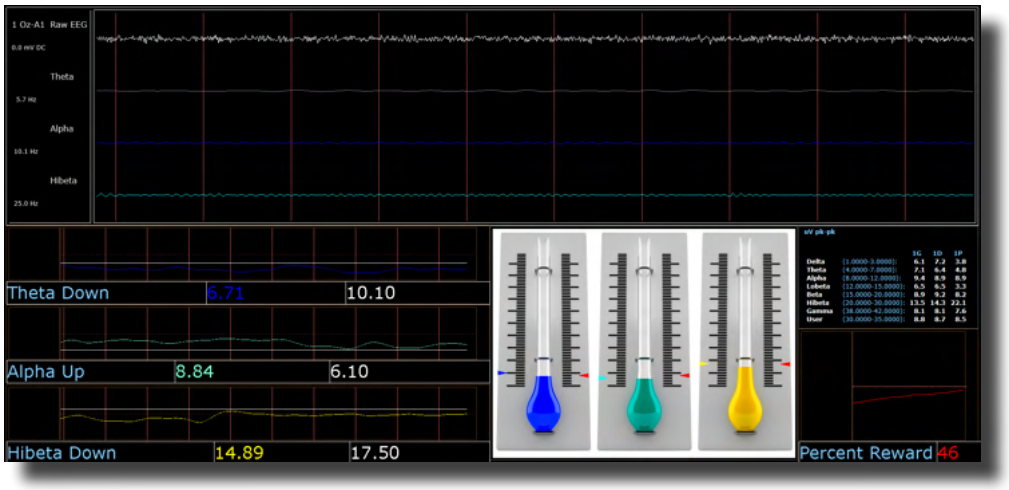
Threshold Hot Keys

'c' increase Coherence Threshold – 'Shift C' to decrease Coherence Threshold

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Relax – Alpha Up Theta Hibeta Down



Basic Overview

Relax is a classic alpha protocol. It consists of a reward on increasing alpha, with inhibits placed on theta and hibeta. This protocol is generally applied at Oz. When all criteria are met for 500 millisecond's the trainee will get a reward tone (.wav)

Default Settings

Threshold Updating is set to autoupdate repeat: after pre-baseline and after each run. This protocol is set to update 10 times every 120 seconds (20 minute session).

Percent Time over Threshold Hot Keys

'a' increase Alpha – 'Shift A' to decrease Alpha

't' increase Theta – 'Shift T' to decrease Theta

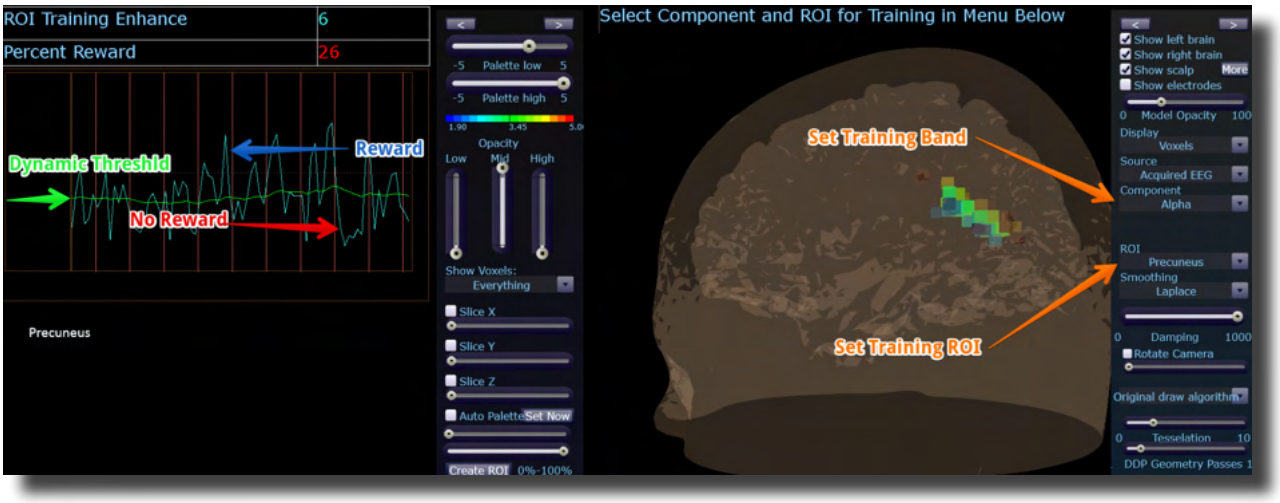
'h' increase Hibeta – 'Shift H' to decrease Hibeta

Note: 'y' key can be used to manually update at any time

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

ROIA Enhance – Region of Interest Up Train



Basic Overview

ROIA Enhance is a protocol that requires the standard 10/20 sites acquired. This settings file is set to up train the band and region of interest defined in the component and ROI drop down menu in the 3D head display. When criteria is met for the trainee will get an event sound (MIDI Tone).

Default Settings

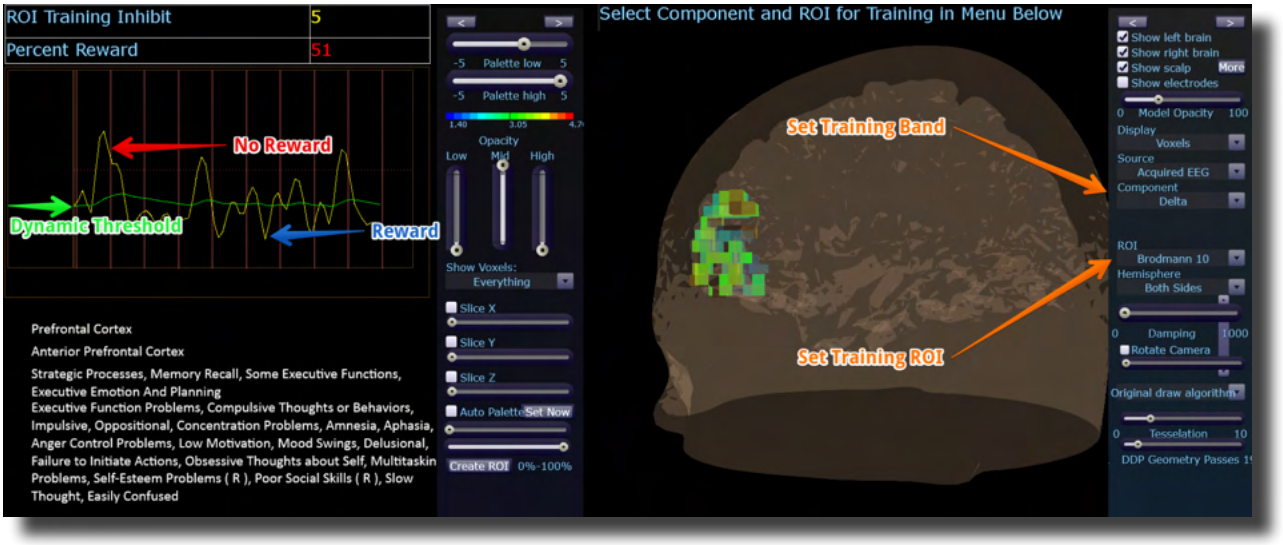
Threshold is set to dynamically adjust which will reward trainee about 50-60% throughout the training session. This settings file is set to run for 20 minutes

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: The following on the fly adjustments DO NOT apply to all settings file designs training region of interest amplitude. The settings file explained above is designed to make on the fly adjustments from the drop down menu. The following equation in the Event Wizard is required in order to make these adjustments on the fly: x=LoretaROIA(SELECTROI,SELECTBAND);

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

ROIA Inhibit Training Dynamic



Basic Overview

ROIA Inhibit is a settings file that requires the standard 10/20 sites acquired. This settings file is set to up train the band and region of interest defined in the component and ROI drop down menu in the 3D head display. When criteria is met for the trainee will get an event sound (MIDI Tone).

Default Settings

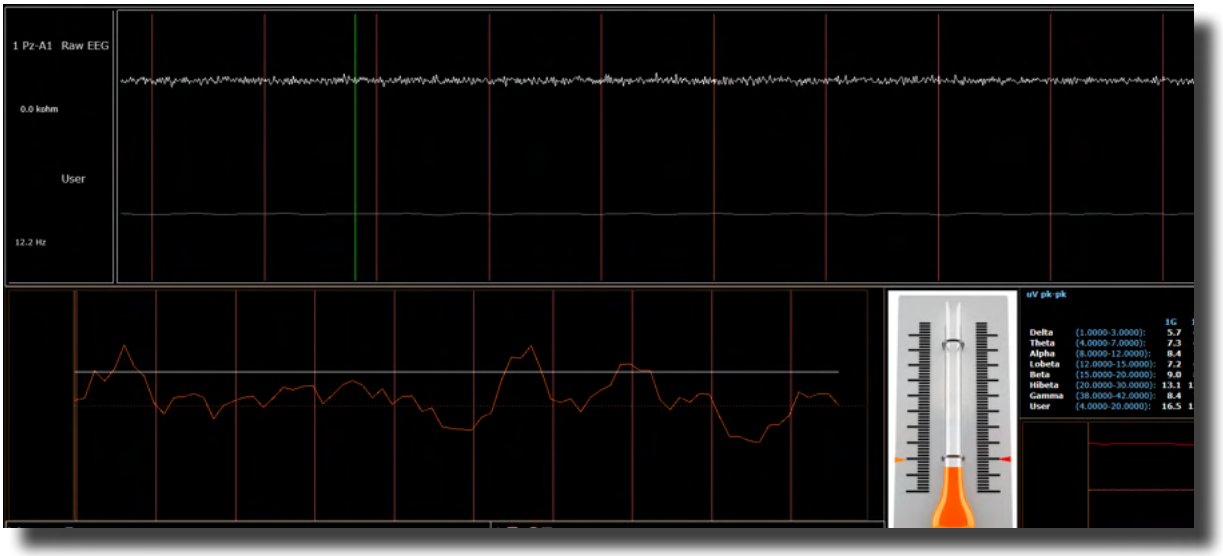
Threshold is set to dynamically adjust which will reward trainee about 50-60% throughout the training session. This settings file is set to run for 20 minutes

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: The following on the fly adjustments DO NOT apply to all settings file designs training region of interest amplitude. The settings file explained above is designed to make on the fly adjustments from the drop down menu. The following equation in the Event Wizard is required in order to make these adjustments on the fly: x=LoretaROIA(SELECTROI,SELECTBAND);

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Squash – Wideband Inhibit



Basic Overview

Squash is a protocol that consists of inhibits placed on four bands, spanning the range from 4-20 Hz. This protocol is generally applied at Cz. When criteria is met the trainee will get an event sound (MIDI Tone).

Default Settings

Threshold Updating is set to autoupdate repeat: after pre-baseline and after each run. This protocol is set to update 10 times, every 120 seconds (20 minute session).

Percent Time over Threshold Hot Keys

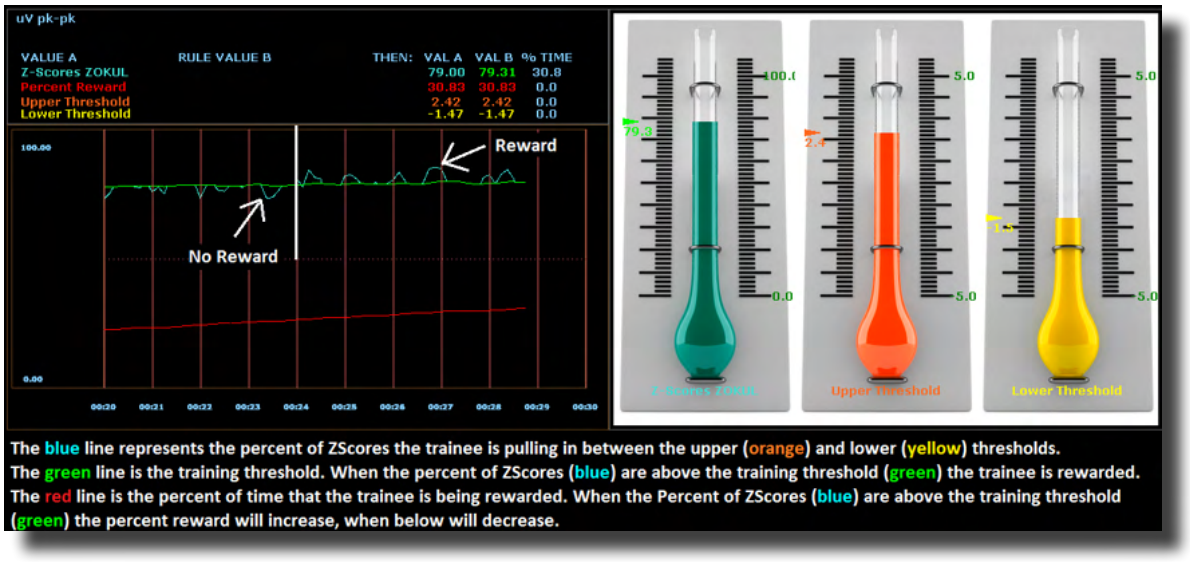
'u' increase User – 'Shift U' to decrease User

Note: 'y' key can be used to manually update at any time

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Z-Score PZOKUL Dynamic and Z-Score PZOKUL 'C' Key



Basic Overview

Z-Score training is a scientifically designed software approach which will analyze selected training; compare those sites with a normative database, and reward the Z-Scores that fit within the desired upper and lower limits (database e.g. ANI, BrainDx, qEEG Pro). Z-Score PZOKUL Dynamic protocol has a training threshold that will auto adjust based on the percent of Z-Scores the trainee is pulling in between the upper and lower limits. Z-Scores PZOKUL 'C' Key - is used when one wants to manually adjust the training threshold. When the trainee's percent of Z-Scores are above the training threshold the trainee will get a reward tone.

Threshold Hot Keys

'u' increase Upper Threshold – 'Shift U' to decrease Upper Threshold

'l' increase Lower Threshold – 'Shift L' to decrease Lower Threshold

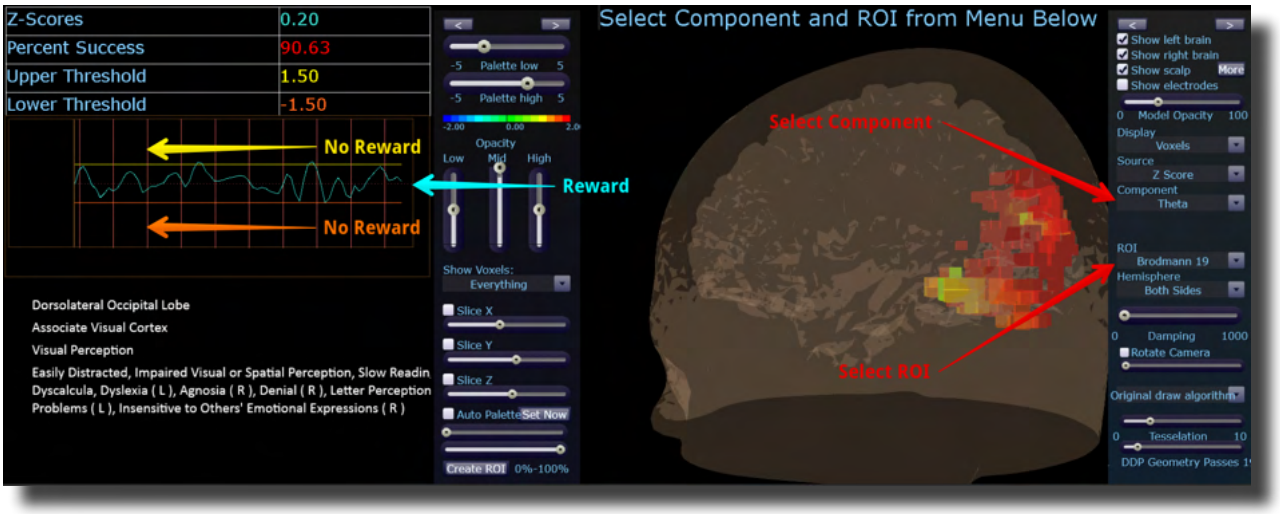
Z-Scores PZOKUL 'C' Key - Threshold Hot Keys

'c' increase Controlled Threshold – 'Shift C' to decrease Controlled Threshold

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Z-Score sLORETA Absolute Power – Training a single Region of Interest and a single band to a normative database



Basic Overview

Z-Score sLORETA Absolute Power training is a scientifically designed software approach which will analyze selected training compare those regions of interest with a normative database, and reward the Z-Scores that fit within the desired upper and lower limits (database e.g. BrainDx, qEEG Pro). This is a settings file that requires the standard 10/20 sites. Z-Score sLORETA Absolute Power settings file will reward the trainee when the selected training perimeter is in-between the upper and lower threshold. The region of interest and component are adjusted from the Live LORETA Projector drop down menu.

Default Settings

Threshold is manually adjusted throughout the training session. This settings file is set to run for 20 minutes

Threshold Hot Keys

'u' increase Upper Threshold – 'Shift U' to decrease Upper Threshold

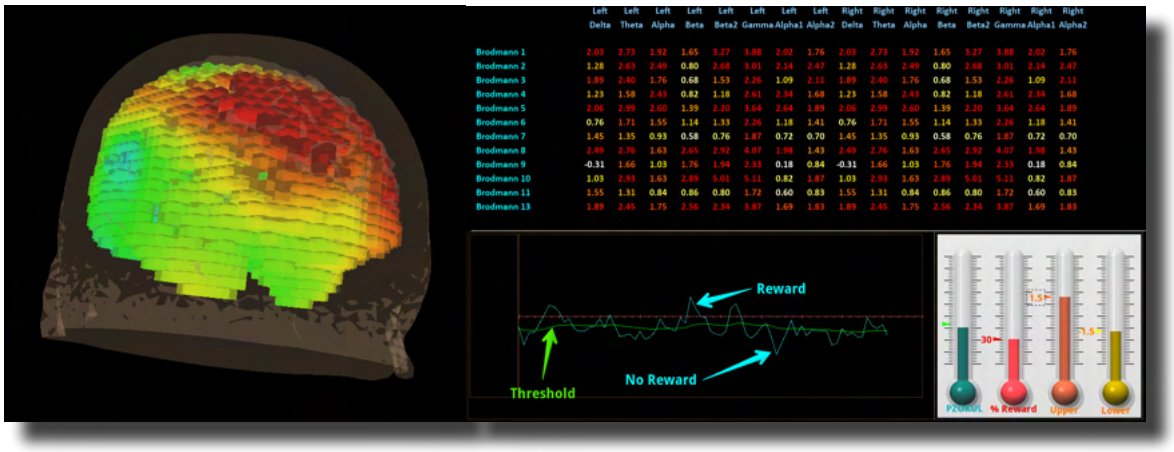
'l' increase Lower Threshold – 'Shift L' to decrease Lower Threshold

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: The following on the fly adjustments DO NOT apply to all settings file designs training region of interest sLORETA Absolute Power. The settings file explained above is designed to make on the fly adjustments from the drop down menu. The following equation in the Event Wizard is required in order to make these adjustments on the fly: x=LoretaROIZAP(SELECTROI,SELECTBAND);

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Z-Score sLORETA PZOKUL Dynamic and Z-Score sLORETA PZOKUL 'C' Key – Training multiple regions of interest and multiple bands to a normative database



Basic Overview

sLORETA Z-Score training is a scientifically designed software approach which will analyze selected training compare those regions of interest with a normative database, and reward the Z-Scores that fit within the desired upper and lower limits (database e.g. BrainDx, qEEG Pro). This is a settings file that requires the standard 10/20 sites. Z-Score PZOKUL Dynamic protocol has a training threshold that will auto adjust based on the percent of Z-Scores the trainee is pulling in between the upper and lower limits. Z-Scores PZOKUL 'C' Key - is used when one wants to manually adjust the training threshold. When the trainee's percent of Z-Scores are above the training threshold the trainee will get a reward tone.
Training location are setup within the BrainAvatar Z-Score Setup. Left click on the regions to train, then right click over the regions to customize training bands.

Threshold Hot Keys

'u' increase Upper Threshold – 'Shift U' to decrease Upper Threshold

'l' increase Lower Threshold – 'Shift L' to decrease Lower Threshold

Z-Scores PZOKUL 'C' Key - Threshold Hot Keys

'c' increase Controlled Threshold – 'Shift C' to decrease Controlled Threshold

This protocol is set up to work with the
BrainMaster DVD player, Flash Player, Dimmer, Multi Media Player, and third party games
(e.g. InnerTube, Particle Editor, Zukor)

Please Note: All designs provided by BrainMaster, are for demonstration and illustration purposes only. It is the clinician's responsibility to ensure that any designs used provide the intended feedback.

Keyboard Quick Keys

The following keyboard controls can be used at any time when the BrainMaster is operating.

Please Note: When autothreshold is used, threshold commands change percent target value.

Please Note: Pressing <Tab> switches into "frequency adjust" mode. Pressing "a" for alpha, "t" for theta, etc, will make the frequency band change per what you have selected for the "on-the-fly" Frequency adjustment.

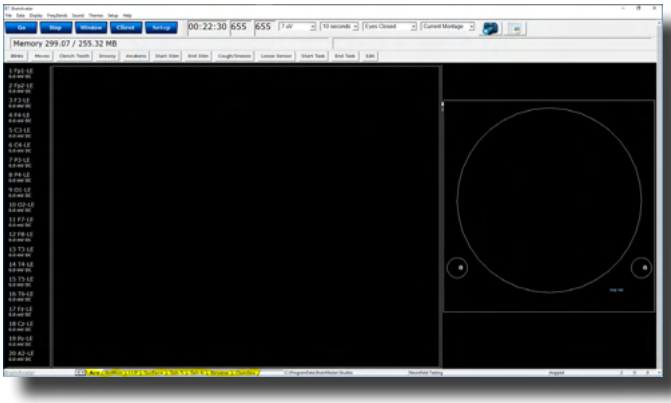
Key	Function
a	Increase the alpha or 3rd bands threshold by 0.1uV or target by 1 percent
A	Decrease the alpha or 3rd bands threshold by 0.1uV or target by 1 percent
b	Increase the beta or 5th bands threshold by 0.1uV or target by 1 percent
B	Decrease the beta or 5th bands threshold by 0.1uV or target by 1 percent
c	Increase coherence/phase threshold
C	Decrease coherence/phase threshold
d	Increase the delta or 1st bands threshold by 0.1uV or target by 1 percent
D	Decrease the delta or 1st bands threshold by 0.1uV or target by 1 percent
g	Increase the gamma or 7th bands threshold 0.1 uV or target by 1 percent
G	Decrease the gamma or 7th bands threshold 0.1 uV or target by 1 percent
h	Increase the hibeta or 6th bands threshold 0.1 uV or target by 1 percent
H	Decrease the hibeta or 6th bands threshold 0.1 uV or target by 1 percent
l	Increase the lobeta or 4th bands threshold 0.1 uV or target by 1 percent
L	Decrease the lobeta or 4th bands threshold 0.1 uV or target by 1 percent
M	Toggle "Brain Mirror" between FFT and Filtered Mode
r	Reduce artifact rejection threshold value by 10 microvolts
R	Increase artifact rejection threshold value by 10 microvolts
t	Increase the theta or 2nd bands threshold by 0.1 uV or target by 1 percent
T	Decrease the theta or 2nd bands threshold by 0.1 uV or target by 1 percent
u	Increase the user or 8th bands threshold by 0.1 uV or target by 1 percent
U	Decrease the user or 8th band threshold by 0.1 uV or target by 1 percent
y	Copy autothresholds into current thresholds ("Autoupdate")
<Shift> + "="	Increase the display gain by 20%
-	Decrease the display gain by 20%
<Space>	Pause or End Pause
1	Set mode so threshold keys (d, t, etc.) adjust channel 1 thresholds only
2	Set mode so threshold keys (d, t, etc.) adjust channel 2 thresholds only

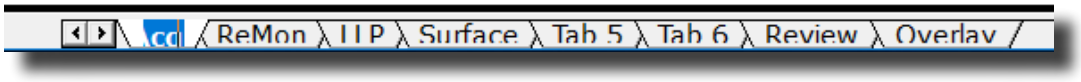
Keyboard Quick Keys (Continued)

Key	Function
3	Set mode so threshold keys (d, t, etc.) adjust channel 3 thresholds only
4	Set mode so threshold keys (d, t, etc.) adjust channel 4 thresholds only
0	Set mode so threshold keys (d, t, etc.) adjust all thresholds
<Up> <Pg Up>	Moves the display up (CSA Display only)
<Down> <Pg Dn>	Moves the display down (CSA Display only)
<Left>	Moves the display left (CSA Display only)
<Right>	Moves the display right (CSA Display only)
<Insert>	Switches between controlling look point and camera (CSA Display Only)
<Shift> + 9	Decreases the Photic Output Amplitude by 1%
<Shift> + 0	Increases the Photic Output Amplitude by 1%
<Shift> + “.”	Enables Impedance (Discovery only)
<Shift> + “,”	Disables Impedance (Discovery only)
<Ctrl> + e	Opens the BrainAvatar Setup Menu on the Event Wizard Tab
<Ctrl> + z	Opens the BrainAvatar Setup Menu on the Z-Score Tab

Renaming Tabs

1. From the Training Screen, find the Tab Section located at the bottom of the screen. Find the tab that you would like to edit, and double-click. Doing this will allow you to edit the Tab name to what you would like.



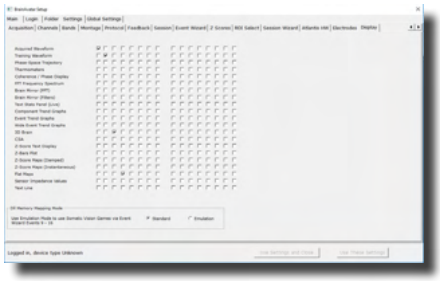


All of the Tabs can be renamed. If the names of the tabs get too long, you can use the arrow buttons located next to the Tab Section to search through them.

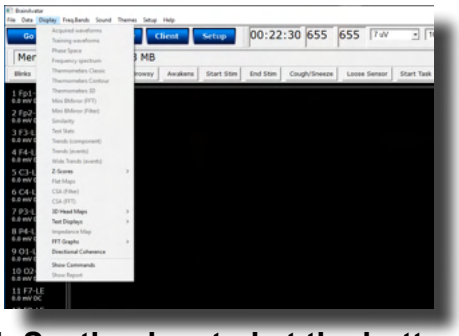
Displays(Tabs)

1. There are three ways to choose what to display on each tabs:

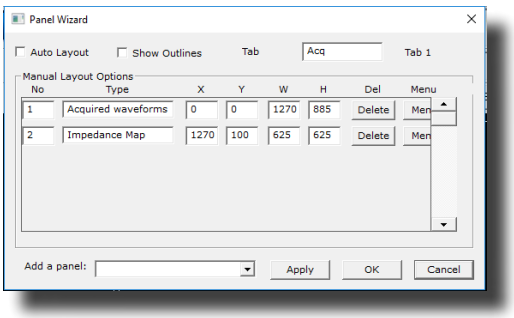
   A. **Classic Method:** From the Setup Screen, click the Settings Tab, and then click the Display Tab, and choose by putting a check mark by the items that you would like displayed for each Tab. There are 6 Tabs for the Training Screen and Client Screen, plus an Overlay Screen, that can be displayed on all Tabs. Once you have chosen the Displays that you would like, please click the Use Settings and Close Button. **PLEASE NOTE:** This will not properly reflect, if you have done any changes using the Panel Wizard.



   B. **Training Screen:** Click the Display Tab, and choose which Display you would like for the Tab that you have currently selected. You will have to do this to each Tab individually. **PLEASE NOTE:** This will not properly reflect, if you have done any changes using the Panel Wizard



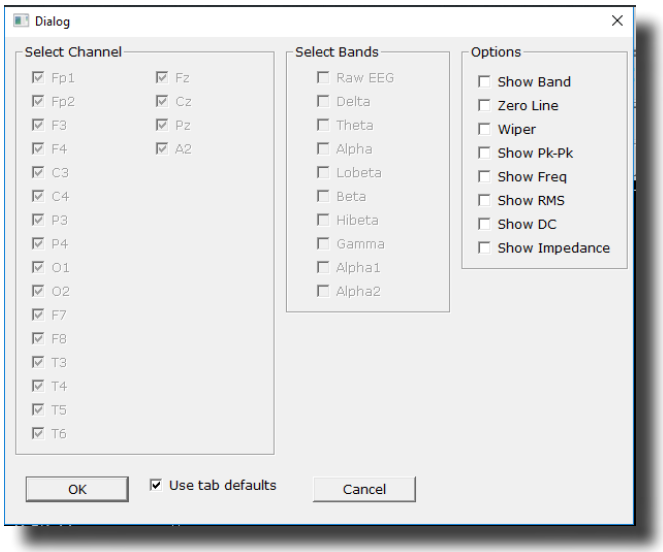
   C. **Panel Wizard: In the Tab Section located at the bottom of your screeen. Find the tab you would like to work with, and** right-click the Tab. **PLEASE NOTE:** For more information on this, please go to the Panel Wizard Section of this Manual



Display Types & Functionality

Acquired Waveforms

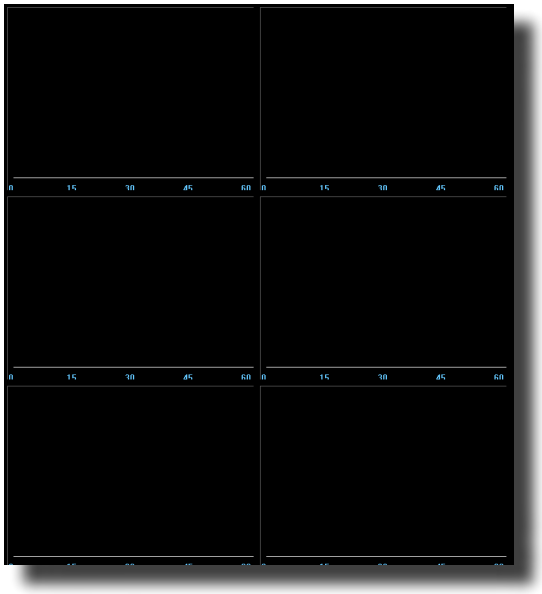
Use: Displays the acquired Waveforms.
Requirements: Displays only sites seleted in the Acquired Section of Settings.
Left-Click Mouse Function: Yes. Highlights an area of EEG for making annotations (Coming Soon).
Right-Click Mouse Function (Panel Option): Yes. Allows you to add filtered waveforms, choose to not view particular waveforms, show uV levels, DC Offsets & Impedances, as well as turning on & off a Zero Line.



Training Waveforms

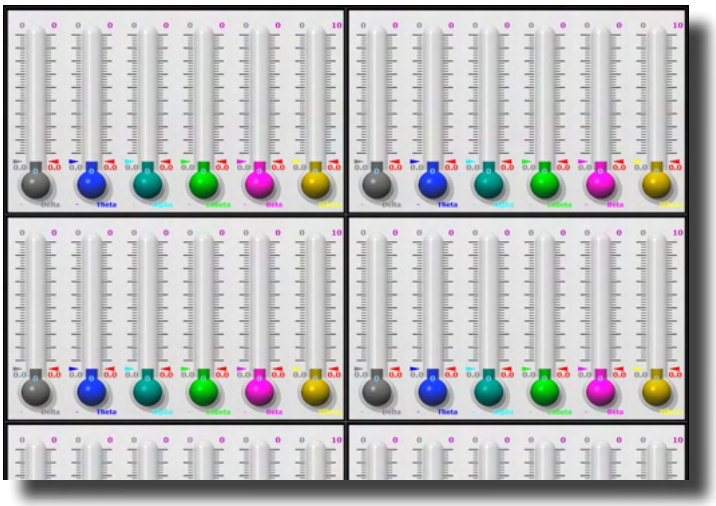
Use: Displays the Trained Waveforms.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: No use at this moment.
Right-Click Mouse Function (Panel Option): Yes. Allows you to add Raw EEG waveforms, show uV levels, frequencies (Filtered Bands

Frequency Spectrum

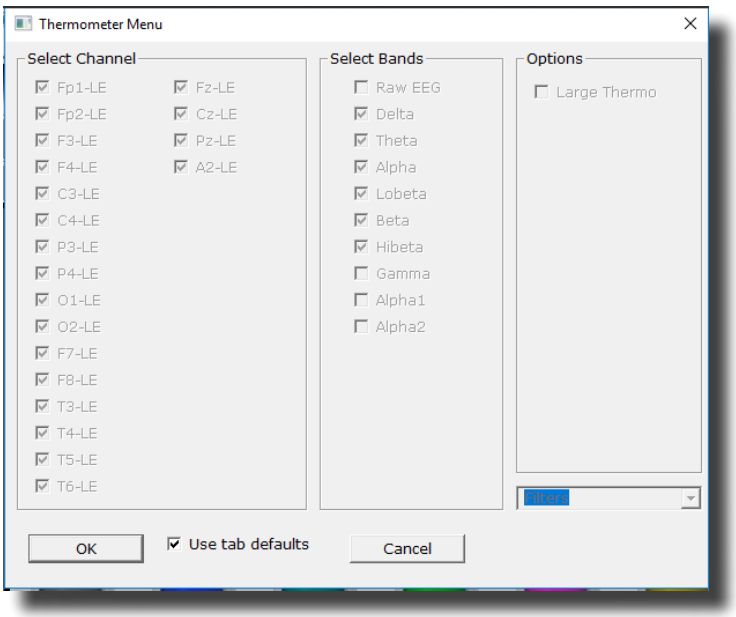


Use: Displays the frequency spectrum for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): No.

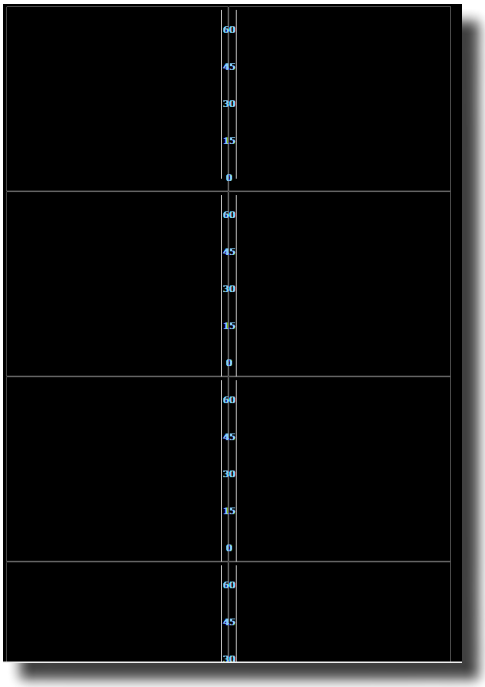
Thermometer Display



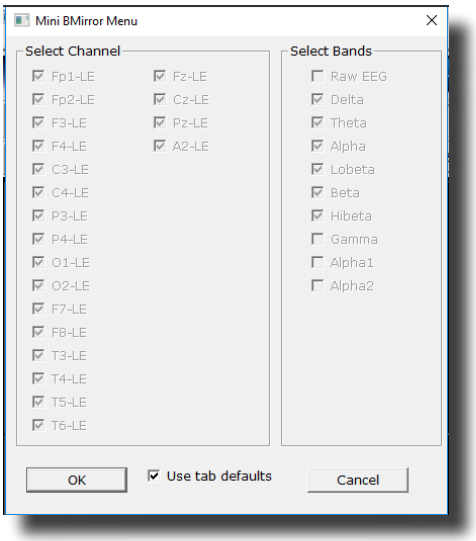
Use: Displays live bar-graphs that show the selected frequency components, along with associated threshold information for each trained site. You can choose from three different types of Thermometers: Classic, Contour (pictured), or Large.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands or Events you would like displayed, as well as choosing the Large Style Thermometer.



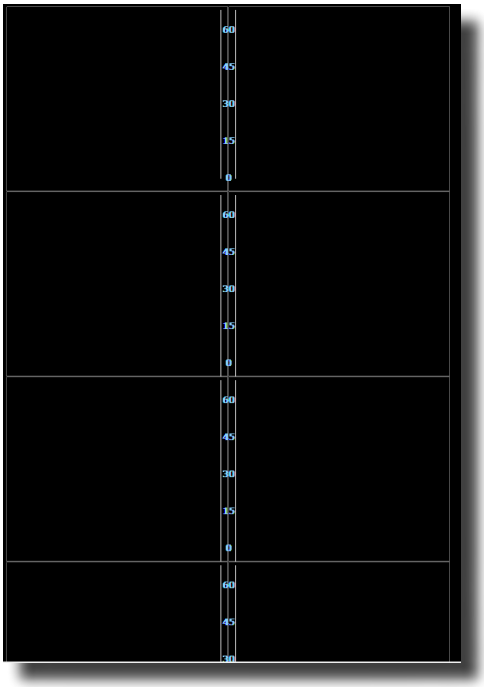
Mini BrainMirror(FFT)



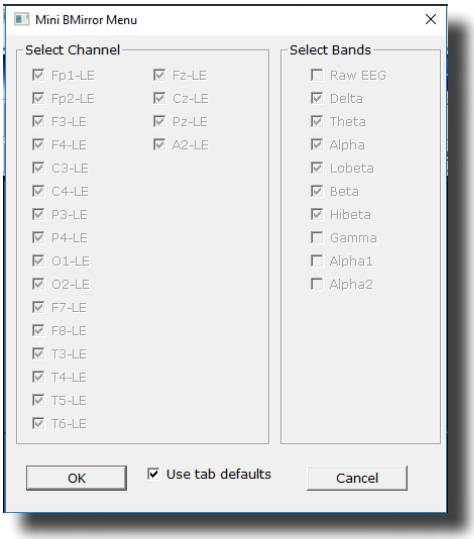
Use: Displays the FFT spectrum for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which channels will be displayed.



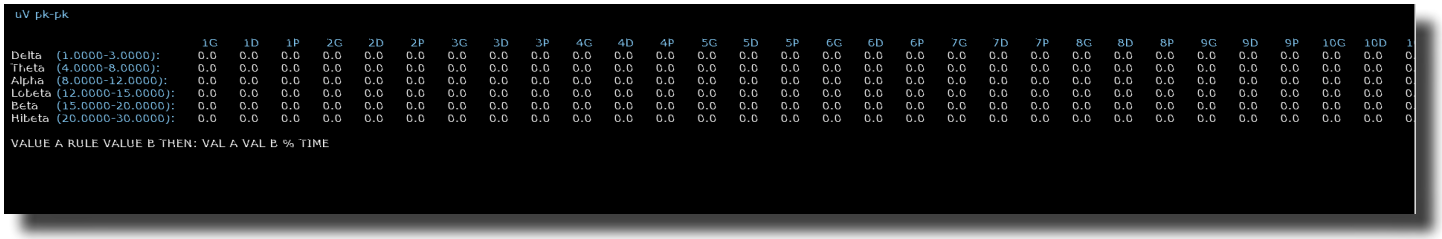
Mini BrainMirror(Filter)



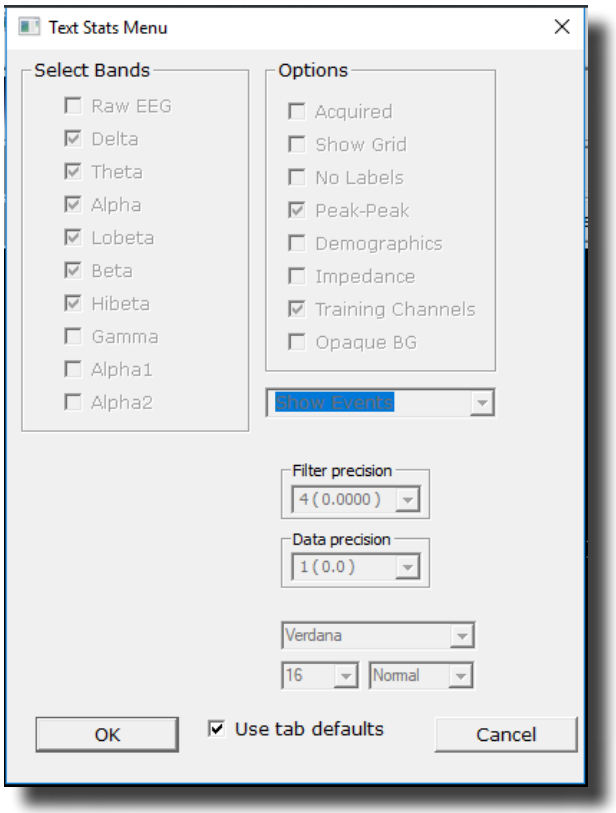
Use: Displays the Filtered spectrum for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which channels will be displayed



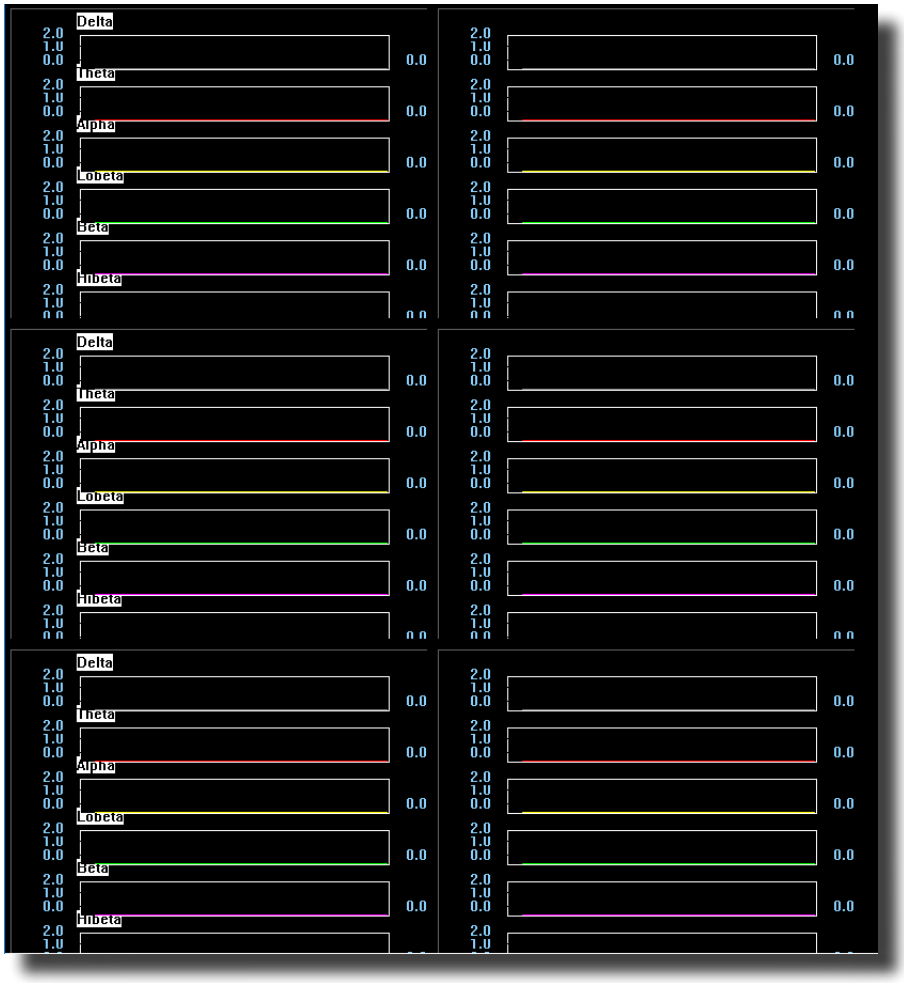
Text Stats



Use: Displays the Grand Average, Damped Average, and percent of time over threshold for each frequency band on each trained site, as well as any Event Information.
Requirements: Displays only sites selected in the Montage Section of Settings, and/or if an Event is enabled.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands or Events you would like displayed, as well as other settings like Impedance readings, Impedances, as well as adjust the data precision.

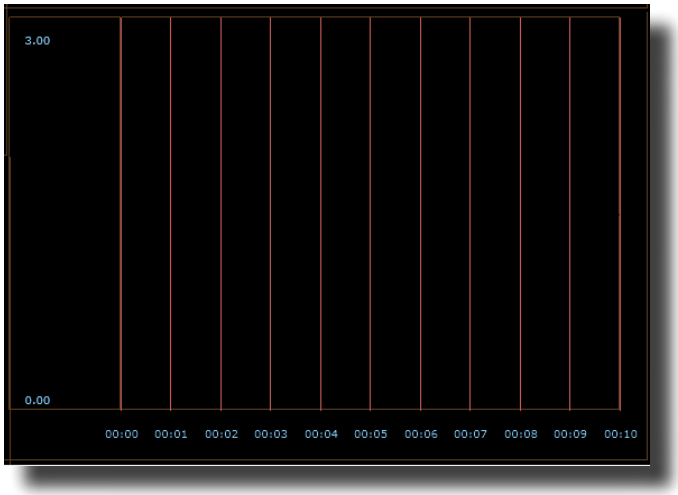


Trend Graph (Components)

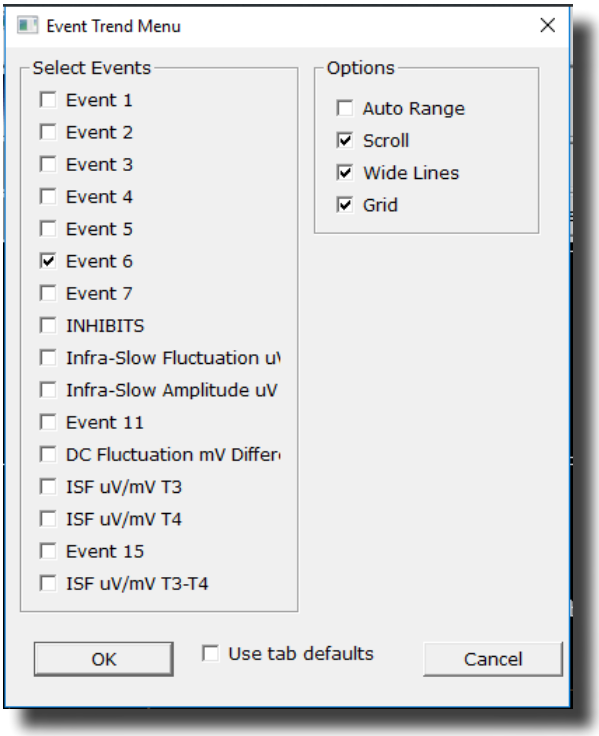


Use: Displays a graph for each component for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): No.

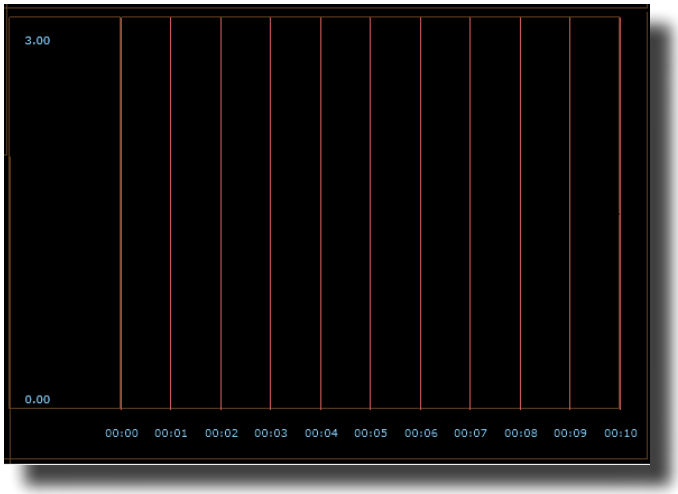
Trend Graph (Events)



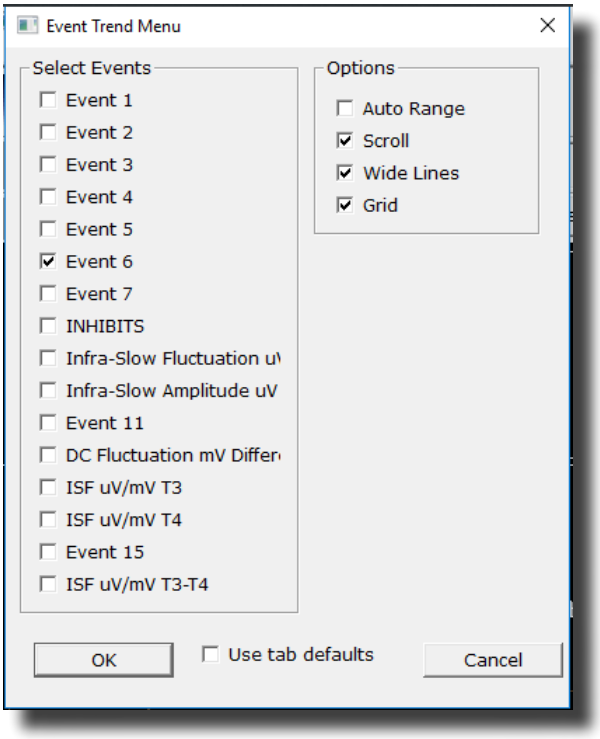
Use: Displays a graph for each event utilized through the Event Wizard.
Requirements: Displays only if an Event is Enabled and Visible.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which Events that you would like to display, as well as different settings for size of the lines, and the range of the graph.



Wide Trend (Events) (Same as Trends)



Use: Displays a graph for each event utilized through the Event Wizard.
Requirements: Displays only if an Event is Enabled and Visible.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which Events that you would like to display, as well as different settings for size of the lines, and the range of the graph.



Z-Scores

SITES: F3 O1 (EO)	Abs	Rel	Rat/T	Rat/A	Rat/B	Rat/G	SITES: F4 O2 (EO)	Abs	Rel	Rat/T	Rat/A	Rat/B	Rat/G
Delta1 (0.5-1.5)	0.0	0.0	0.0	0.0	0.0	0.0	Delta1 (0.5-1.5)	0.0	0.0	0.0	0.0	0.0	0.0
Delta (1.7-3.7)	0.0	0.0		0.0	0.0	0.0	Delta (1.7-3.7)	0.0	0.0		0.0	0.0	0.0
Theta (3.7-7.7)	0.0	0.0			0.0	0.0	Theta (3.7-7.7)	0.0	0.0			0.0	0.0
Alpha (7.7-12.7)	0.0	0.0				0.0	Alpha (7.7-12.7)	0.0	0.0				0.0
Beta (12.7-25.2)	0.0	0.0					Beta (12.7-25.2)	0.0	0.0				
Sum (1.7-25.2)	0.0	0.0					Sum (1.7-25.2)	0.0	0.0				
Beta2 (25.2-35.2)	0.0	0.0					Beta2 (25.2-35.2)	0.0	0.0				
Gamma (35.2-50.2)	0.0	0.0					Gamma (35.2-50.2)	0.0	0.0				
Alpha1 (7.7-10.2)	0.0	0.0					Alpha1 (7.7-10.2)	0.0	0.0				
Alpha2 (10.2-12.7)	0.0	0.0					Alpha2 (10.2-12.7)	0.0	0.0				
Delta1 (0.5-1.5)	0.0	0.0	0.0	0.0	0.0	0.0	Delta1 (0.5-1.5)	0.0	0.0	0.0	0.0	0.0	0.0
Delta (1.7-3.7)	0.0	0.0		0.0	0.0	0.0	Delta (1.7-3.7)	0.0	0.0		0.0	0.0	0.0
Theta (3.7-7.7)	0.0	0.0			0.0	0.0	Theta (3.7-7.7)	0.0	0.0			0.0	0.0
Alpha (7.7-12.7)	0.0	0.0				0.0	Alpha (7.7-12.7)	0.0	0.0				0.0
Beta (12.7-25.2)	0.0	0.0					Beta (12.7-25.2)	0.0	0.0				
Sum (1.7-25.2)	0.0	0.0					Sum (1.7-25.2)	0.0	0.0				
Beta2 (25.2-35.2)	0.0	0.0					Beta2 (25.2-35.2)	0.0	0.0				
Gamma (35.2-50.2)	0.0	0.0					Gamma (35.2-50.2)	0.0	0.0				
Alpha1 (7.7-10.2)	0.0	0.0					Alpha1 (7.7-10.2)	0.0	0.0				
Alpha2 (10.2-12.7)	0.0	0.0					Alpha2 (10.2-12.7)	0.0	0.0				

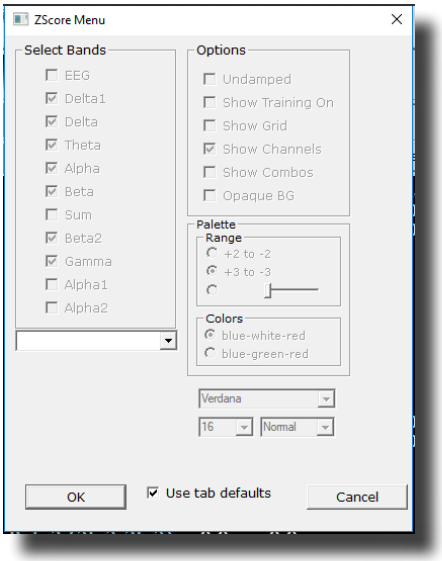
	F3-O1:			F3-F4:			F3-O2:			O1-F4:			O1-O2:			F4-O2:	
	ASY	COH	PHA	ASY	COH	PHA	ASY	COH	PHA	ASY	COH	PHA	ASY	COH	PHA	ASY	COH	PHA
D1 (0.5-1.5)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D (1.7-3.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T (3.7-7.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A (7.7-12.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B (12.7-25.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S (1.7-25.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B2 (25.2-35.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G (35.2-50.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A1 (7.7-10.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A2 (10.2-12.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Use: Displays the Absolute Power, Relative Power, and Power Ratios for all components chosen at each trained site.

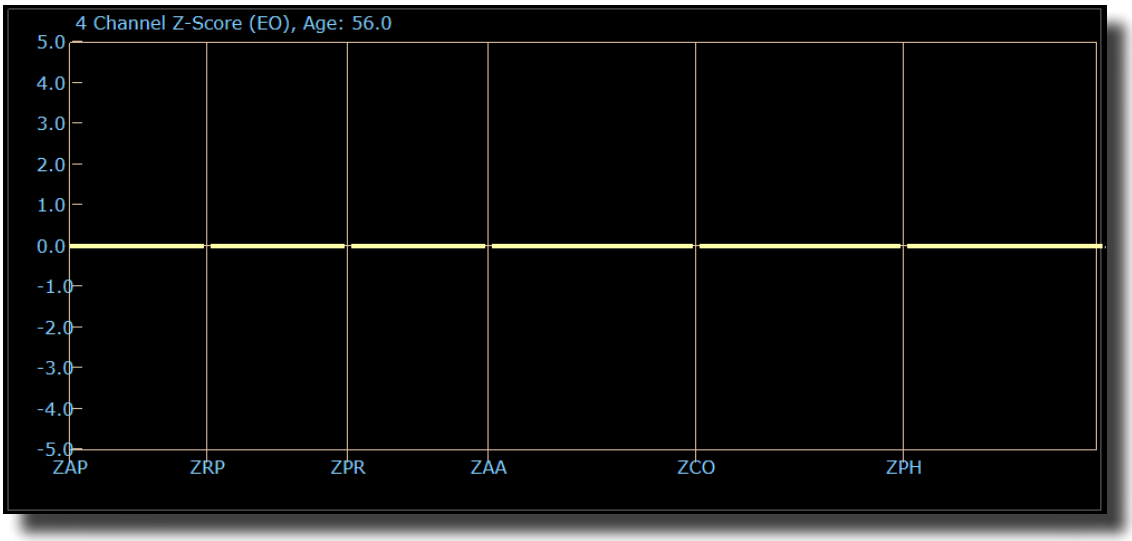
Requirements: Displays only for sites, components, and values chosen in the Z-Score Section of Settings.

Left-Click Mouse Function: No.

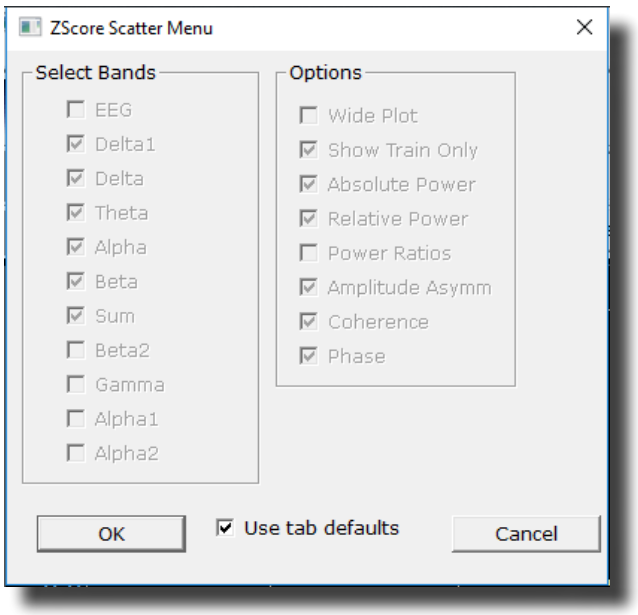
Right-Click Mouse Function (Panel Option): Yes. Allows you to select the bands for viewing, the speed that you would like for the data, what data you would like to view, adjust the palette for the data coming in, as well as choose to display only the Z-Scores being LZT Trained.



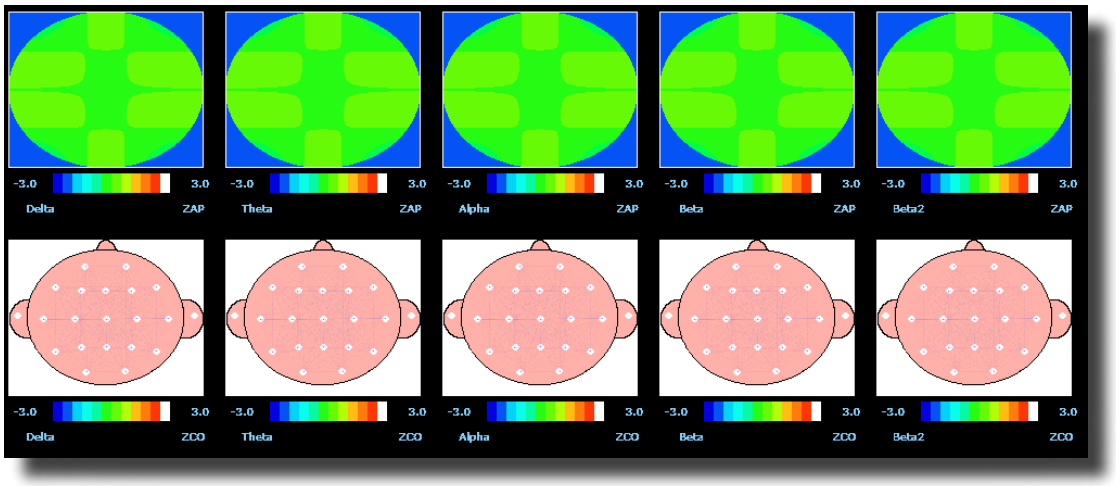
Z-Bars Plot



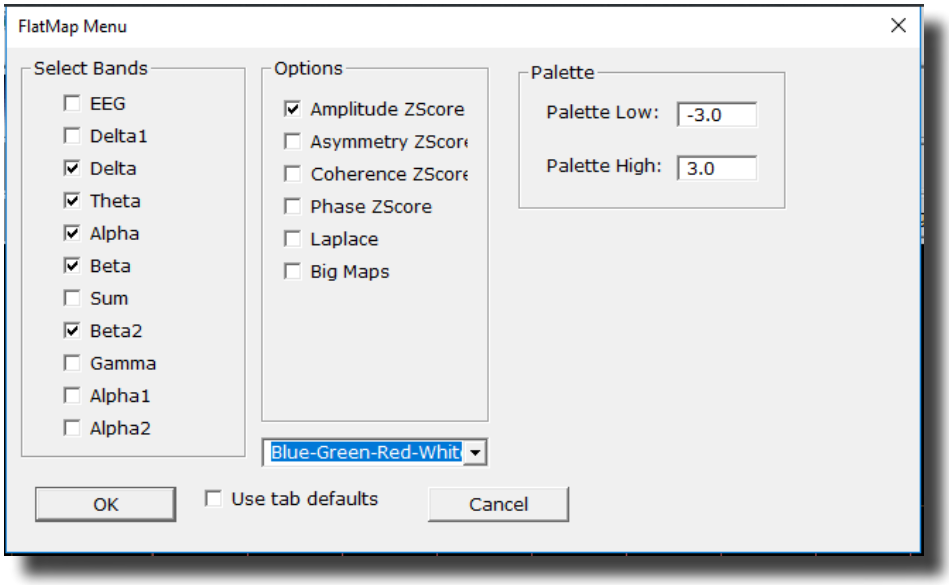
Use: Displays the bar-graph representation of the Absolute Power, Relative Power, Power Ratios, Phase, Coherence, and Asymmetry for all components chosen at each trained site.
Requirements: Displays only for sites, components, and values chosen in the Z-Score Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to select the bands for viewing as well as which metrics you would like to view



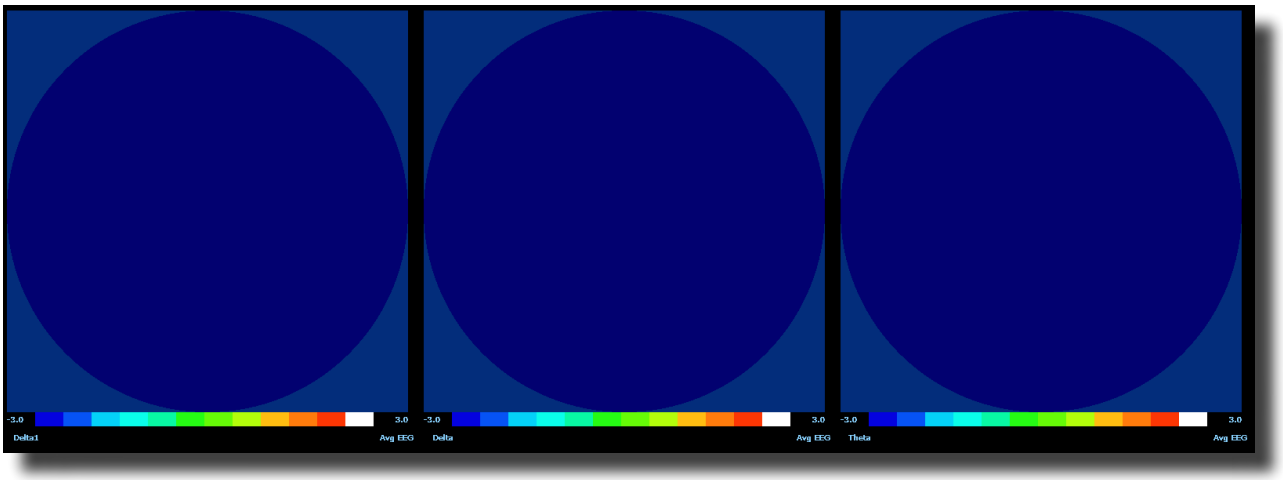
Z-Maps



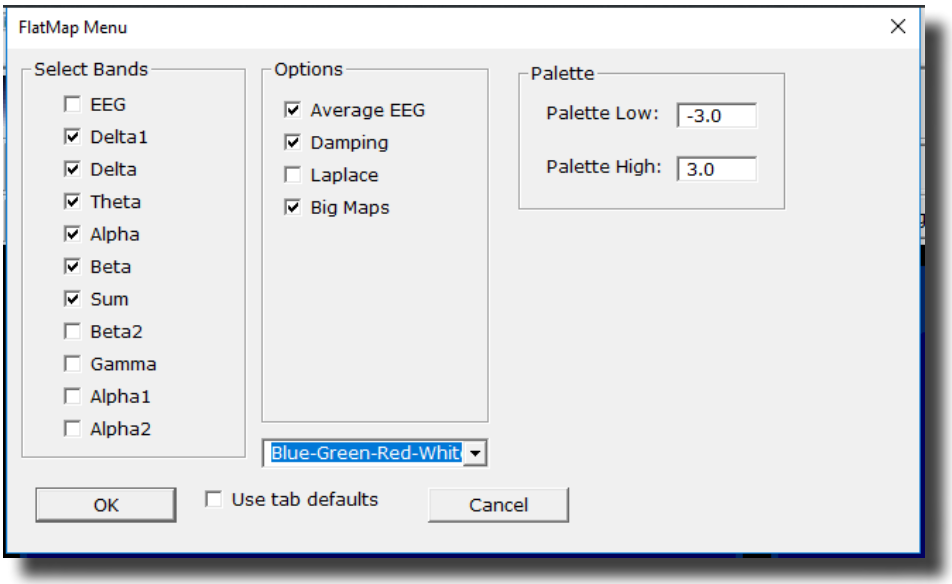
Use: Displays a topographic version of the Z-Scores for each filtered waveform.
Requirements: Displays only if you have 19-Channel Z-scores chosen in the Z-Score Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose what Bands are displayed, the palette range of the maps as well as choose between averaged maps, instantaneous maps, damped maps, and/or all of the different connectivity maps.



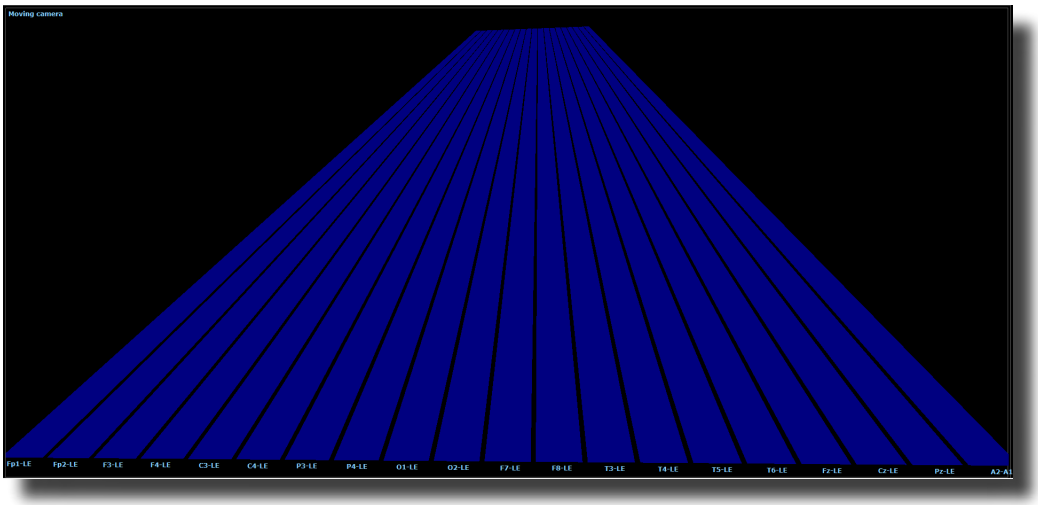
Flat Maps



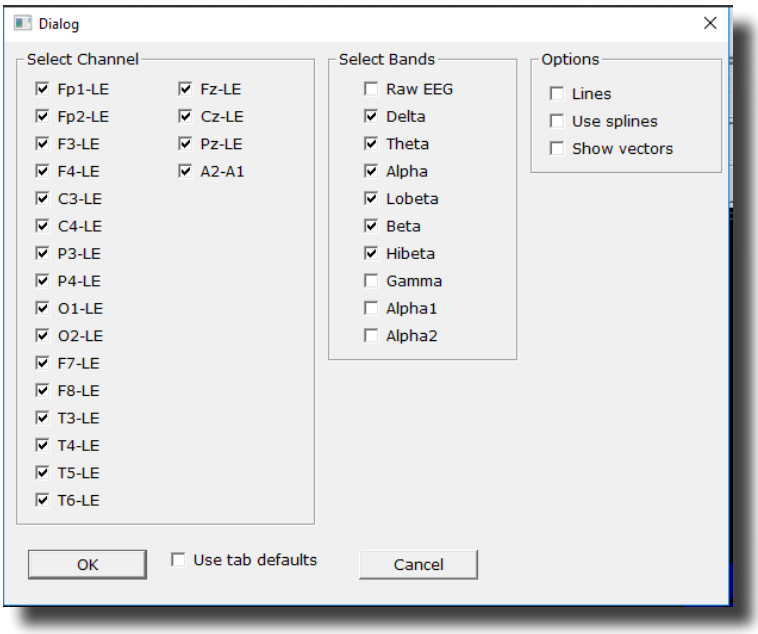
Use: Displays a topographic version of the powers for each filtered waveform.
Requirements: Displays for only the bands chosen to be viewed.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose what Bands are displayed, the palette range, as well as choose between averaged maps, instantaneous maps, big maps, damped maps, and Laplacian View.



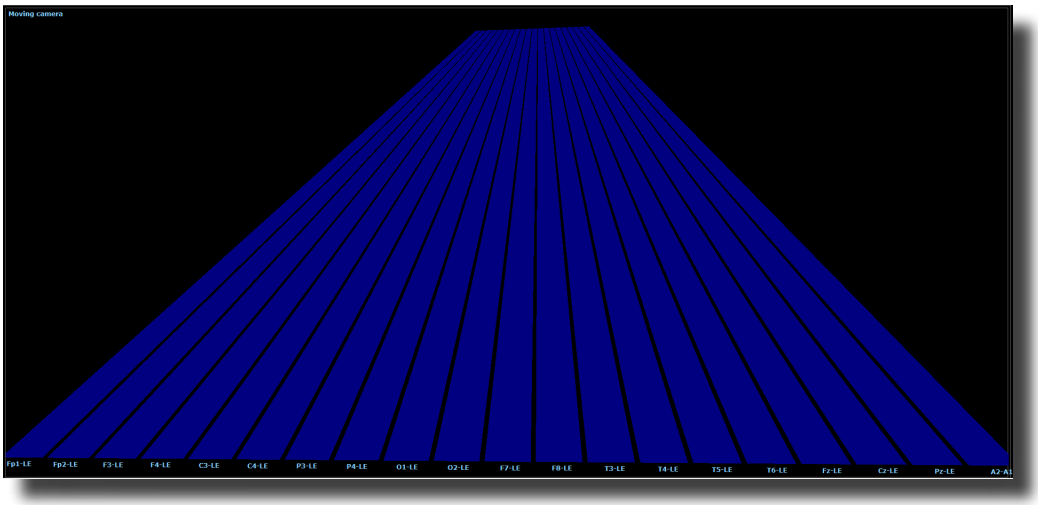
CSA (Filtered)



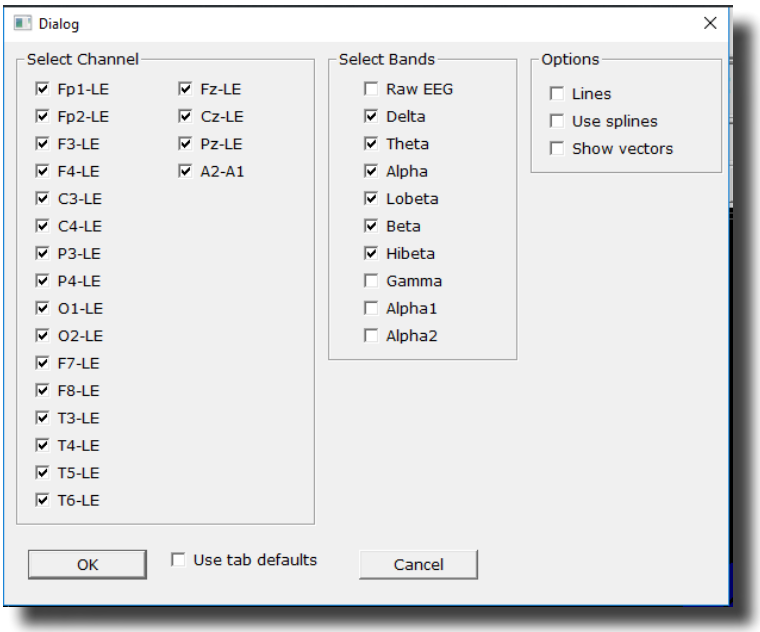
Use: Displays a filtered version of the Compressed Spectral Array for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: Yes. By left-clicking and holding down on the mouse, you can change the displays orientation. Using the Scroll control, will zoom the field in and out. See the Keyboard Quick Keys for more options.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose what Bands are displayed, as well as if you would like this to be displayed as a full image, or a line image.



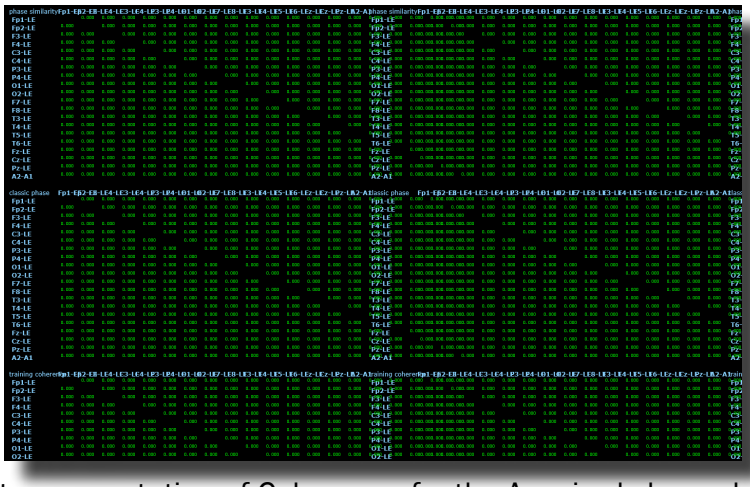
CSA (FFT)



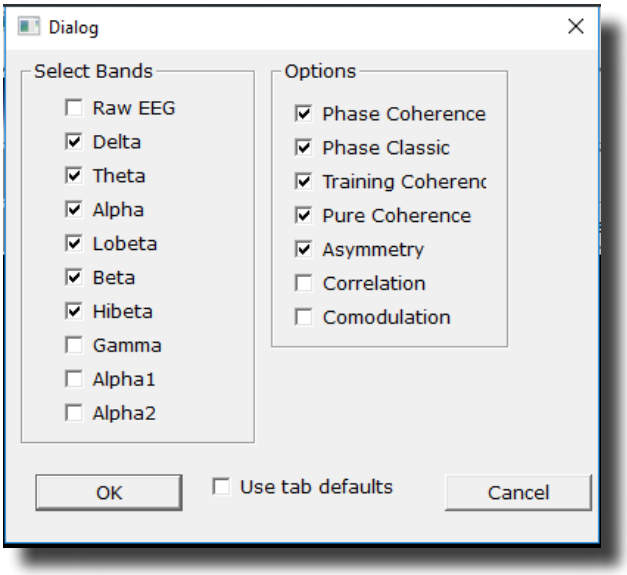
Use: Displays a FFT version of the Compressed Spectral Array for each trained site.
Requirements: Displays only sites selected in the Montage Section of Settings.
Left-Click Mouse Function: Yes. By left-clicking and holding down on the mouse, you can change the displays orientation. Using the Scroll control, will zoom the field in and out. See the Keyboard Quick Keys for more options.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose what Bands are displayed, as well as if you would like this to be displayed as a full image, or a line image.



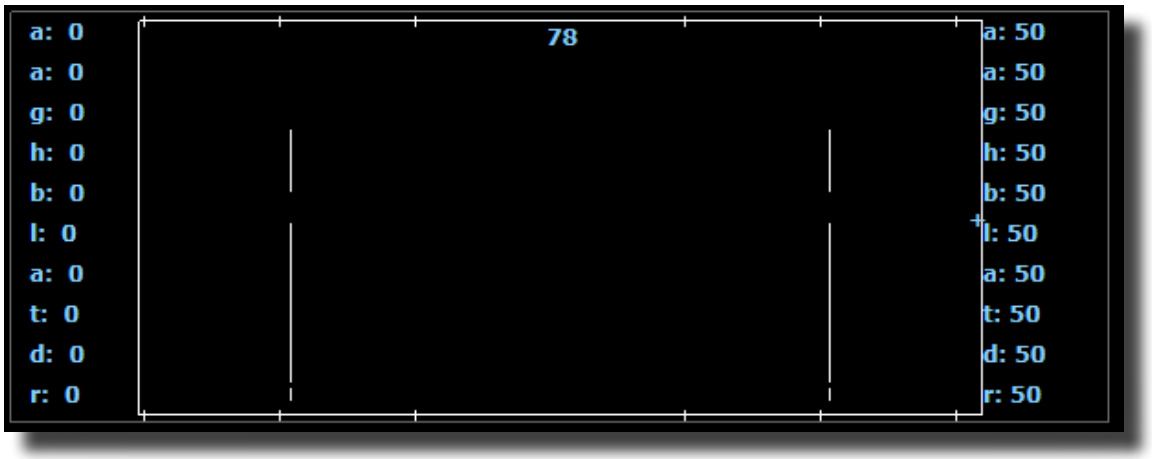
Coherence



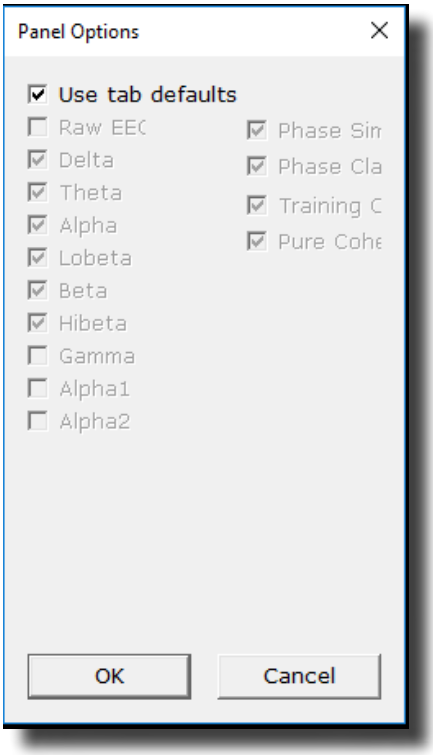
Use: Displays a text representation of Coherence for the Acquired channels.
Requirements: Displays only sites selected in the Acquired Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands you would like to look at, as well as what type of Coherence you would like to view.



Similarity



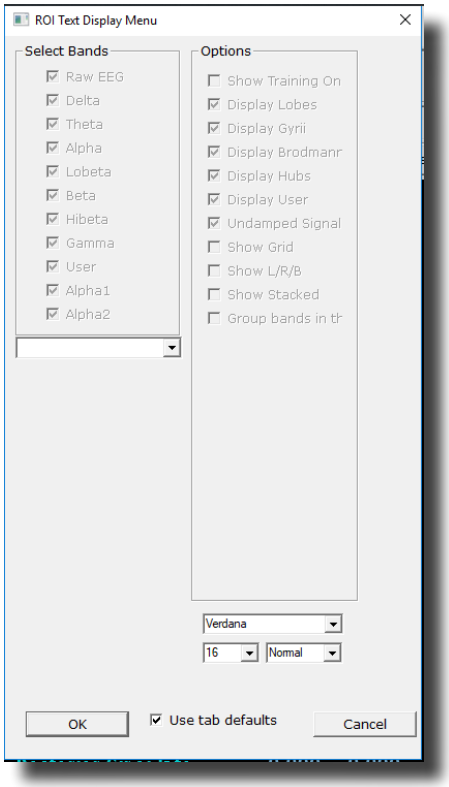
Use: Displays a Bar Graph representation for the trained channels.
Requirements: Displays only sites selected in the Montage section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands you would like to look at, as well as what type of Coherence you would like to view.



ROI Amplitudes Text

	Left Delta	Left Theta	Left Alpha	Left Lobeta	Left Beta	Left Hibeta	Right Delta	Right Theta	Right Alpha	Right Lobeta	Right Beta	Right Hibeta
Frontal Lobe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Limbic Lobe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Occipital Lobe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Parietal Lobe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sub Lobar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Temporal Lobe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
All	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Angular Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Anterior Cingulate	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cingulate Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cuneus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Extra Nuclear	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fusiform Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inferior Frontal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inferior Occipital Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inferior Parietal Lobule	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inferior Temporal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Insula	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LingualGyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Medial Frontal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Middle Frontal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Middle Occipital Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Middle Temporal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Orbital Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Paracentral Lobule	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Parahippocampal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Postcentral Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Posterior Cingulate	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Precentral Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Precuneus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Rectal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sub Gyral	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Subcallosal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Superior Frontal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Superior Occipital Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Superior Parietal Lobule	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Superior Temporal Gyrus	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

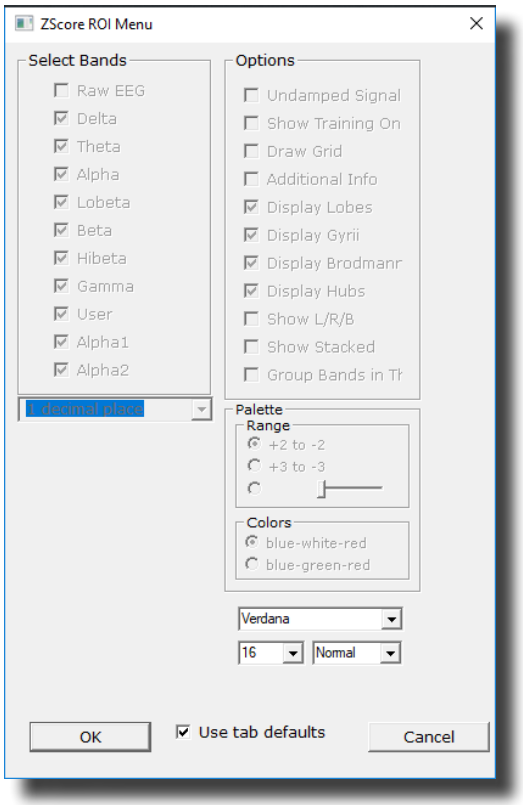
Use: Displays a text representation of ROI Amplitudes for All ROI's.
Requirements: BrainAvatar Live sLORETA Projector.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands you would like to look at, as well as what ROI's to view.



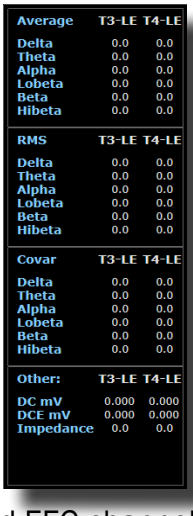
ROI Z-ScoreText

	Left Delta	Left Theta	Left Alpha	Left Lobeta	Left Beta	Left Hibeta	Right Delta	Right Theta	Right Alpha	Right Lobeta	Right Beta	Right Hibeta
Frontal Lobe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limbic Lobe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Occipital Lobe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parietal Lobe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub Lobar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Temporal Lobe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Angular Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anterior Cingulate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cingulate Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cuneus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Extra Nuclear	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fusiform Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inferior Frontal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inferior Occipital Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inferior Parietal Lobule	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inferior Temporal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Insula	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LingualGyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medial Frontal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Frontal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Occipital Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Temporal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orbital Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paracentral Lobule	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parahippocampal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Postcentral Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Posterior Cingulate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Precentral Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Precuneus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rectal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub Gyral	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subcallosal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Superior Frontal Gyrus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Use: Displays a text representation of ROI Amplitudes for All ROI's.
Requirements: BrainAvatar Live sLORETA Projector.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which bands you would like to look at, as well as what ROI's, and the palette range.



EEG Text



Average	T3-LE	T4-LE
Delta	0.0	0.0
Theta	0.0	0.0
Alpha	0.0	0.0
Lobeta	0.0	0.0
Beta	0.0	0.0
Hibeta	0.0	0.0

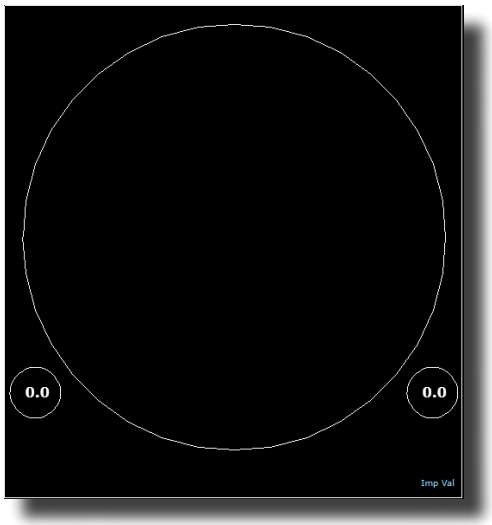
RMS	T3-LE	T4-LE
Delta	0.0	0.0
Theta	0.0	0.0
Alpha	0.0	0.0
Lobeta	0.0	0.0
Beta	0.0	0.0
Hibeta	0.0	0.0

Covar	T3-LE	T4-LE
Delta	0.0	0.0
Theta	0.0	0.0
Alpha	0.0	0.0
Lobeta	0.0	0.0
Beta	0.0	0.0
Hibeta	0.0	0.0

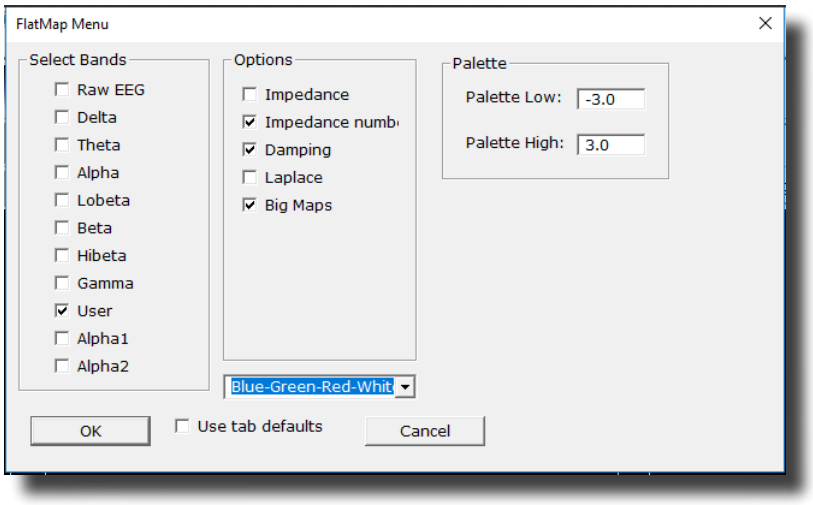
Other:	T3-LE	T4-LE
DC mV	0.000	0.000
DCE mV	0.000	0.000
Impedance	0.0	0.0

Use: Displays text values for all acquired EEG channels, including, Average, RMS, Covariance, DC, DCE and Impedance* values.
Requirements: Displays only sites selected in the Acquired Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): No.

Impedance Maps



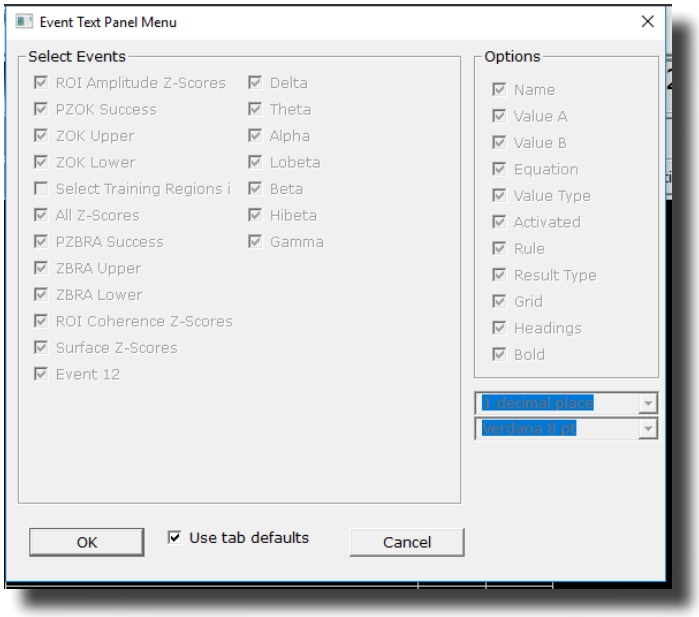
Use: Displays text and graphical displays for the impedance measurments.
Requirements: Displays only sites selected in the Acquired Section of Settings.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose the size of the map displays, as well as what types of maps you would like to be displayed.



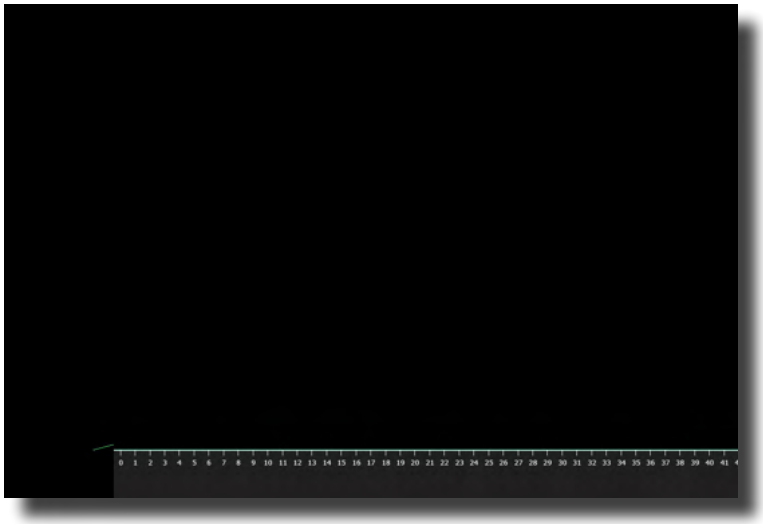
Event Text

Name	Val A	Val B
ROI Amplitude Z-Scores	0.0	0.0
PZOK Success	0.0	0.0
ZOK Upper	0.0	0.0
ZOK Lower	0.0	0.0
Select Training Regions in Z-Score Setup 'Ctrl Z'	0.0	0.0
All Z-Scores	0.0	0.0
PZBRA Success	0.0	0.0
ZBRA Upper	0.0	0.0
ZBRA Lower	0.0	0.0
ROI Coherence Z-Scores	0.0	0.0
Surface Z-Scores	0.0	0.0
	0.0	0.0
Delta	0.0	0.0
Theta	0.0	0.0
Alpha	0.0	0.0
Lobeta	0.0	0.0
Beta	0.0	0.0
Hibeta	0.0	0.0
Gamma	0.0	0.0

Use: Displays Text for the Enabled Events.
Requirements: Actively used Events.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose the size and which events are displayed, as well as which portions of an Event is displayed.

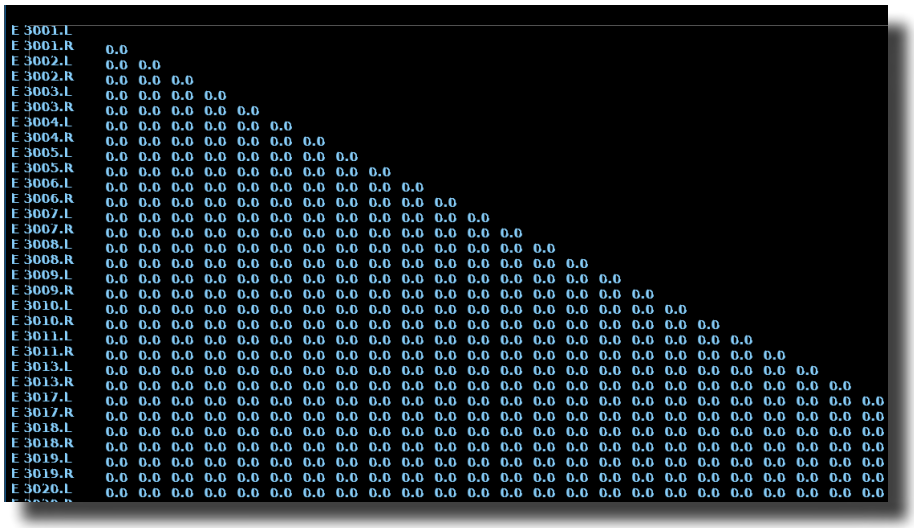


FFT Graph



Use: Displays a Line Graph for all channels from the Acquired or Training Channels
Requirements: Acquired or Montaged Channels.
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): No.

ROI Coherence Text Display

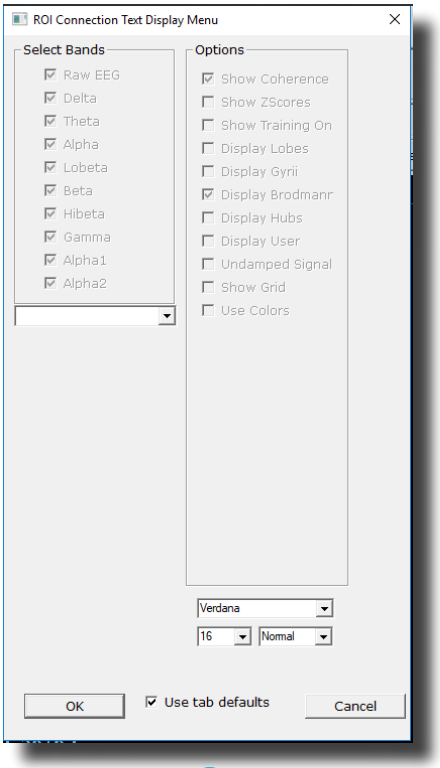


Use: Displays text information for the Coherences of ROI's

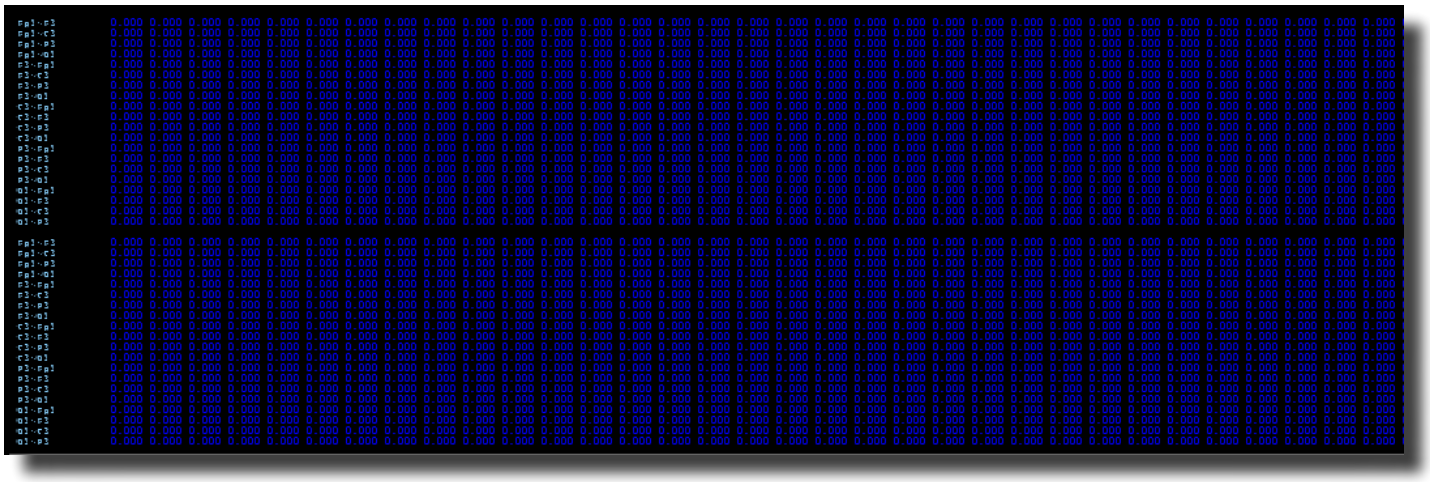
Requirements: Connectivity Suite

Left-Click Mouse Function: No.

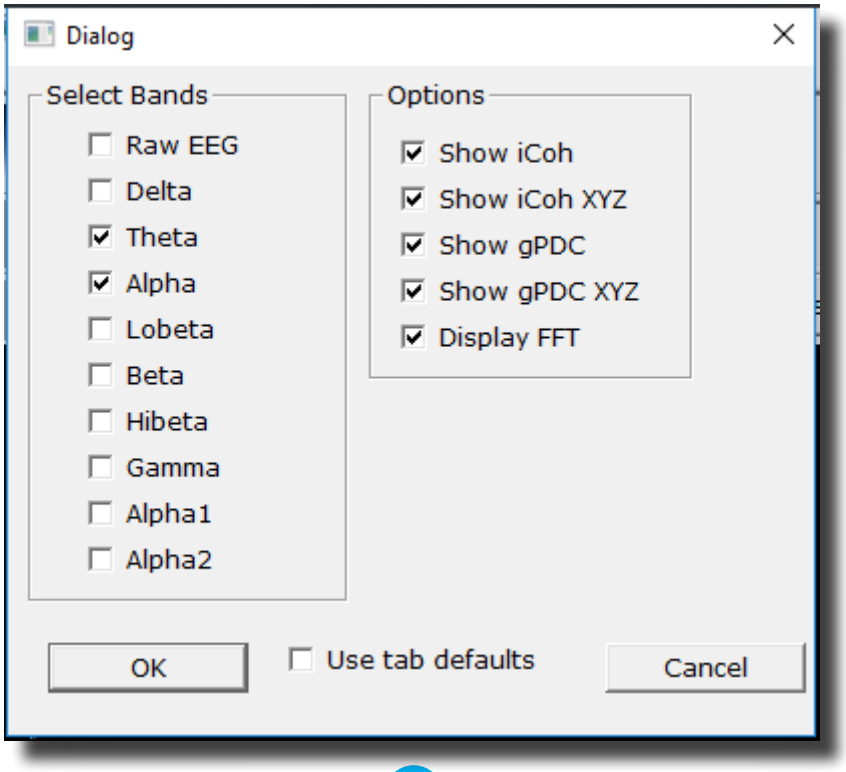
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose the size of font, as well as which ROI Coherences you would like to view, or whether it's standard or Z-Score Coherences.



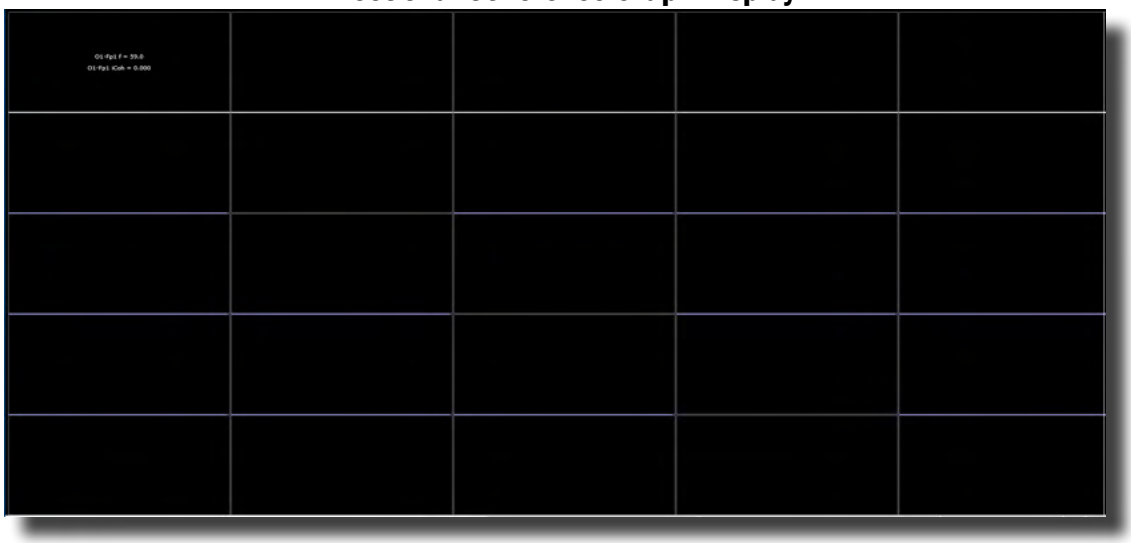
Directional Coherence Text



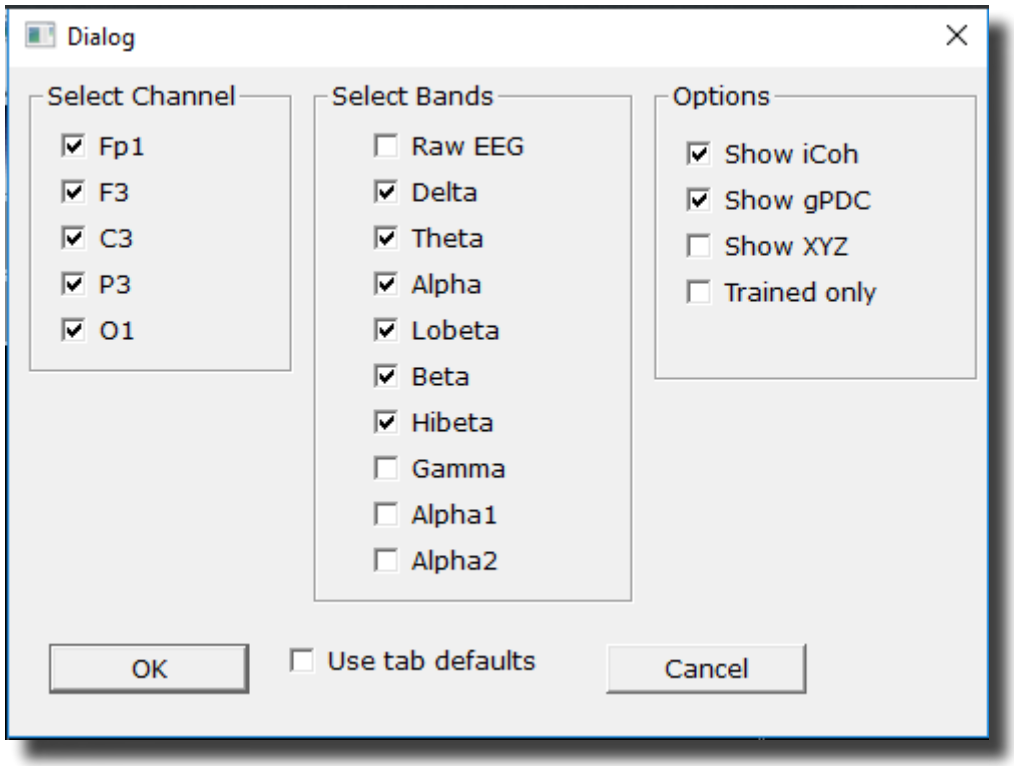
Use: Displays Text for all included Directional Coherence Values
Requirements: Connectivity Suite
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose the size of the Font, as well as which types of Directional Coherence you would like to view.



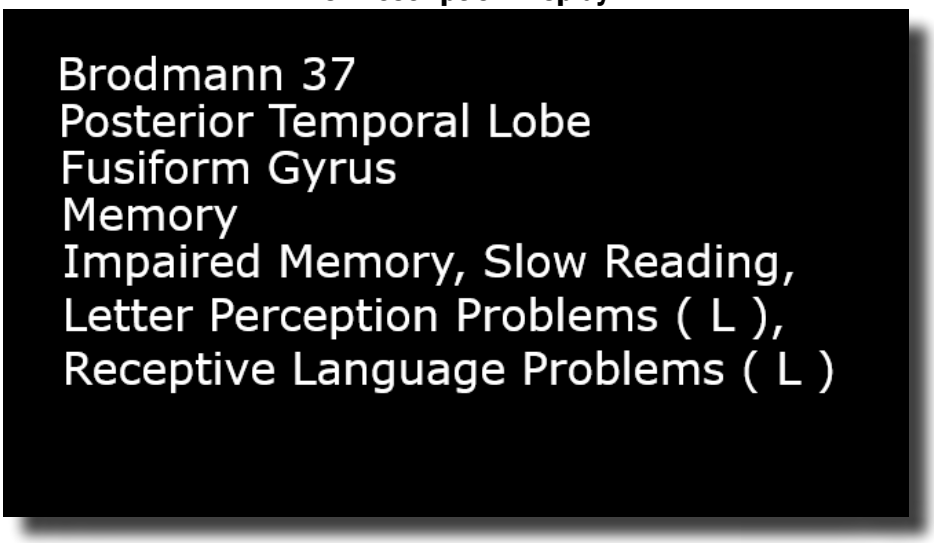
Directional Coherence Graph Display



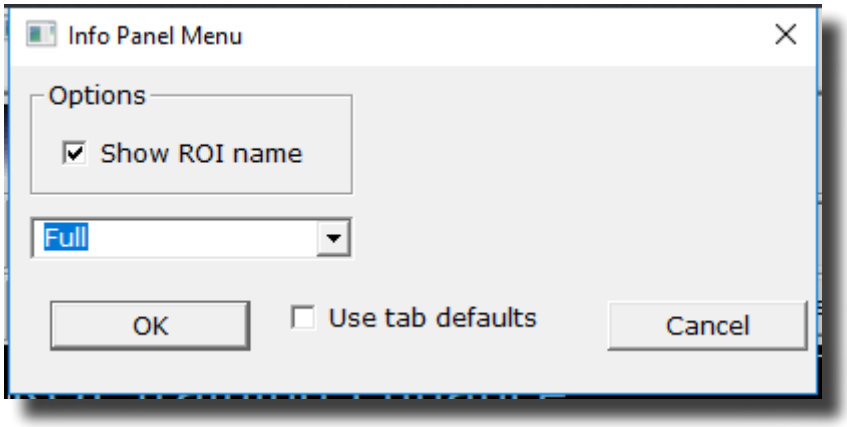
Use: Displays graphs for all included Directional Coherence Values
Requirements: Connectivity Suite
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose which types of Directional Coherence you would like to view.



ROI Description Display

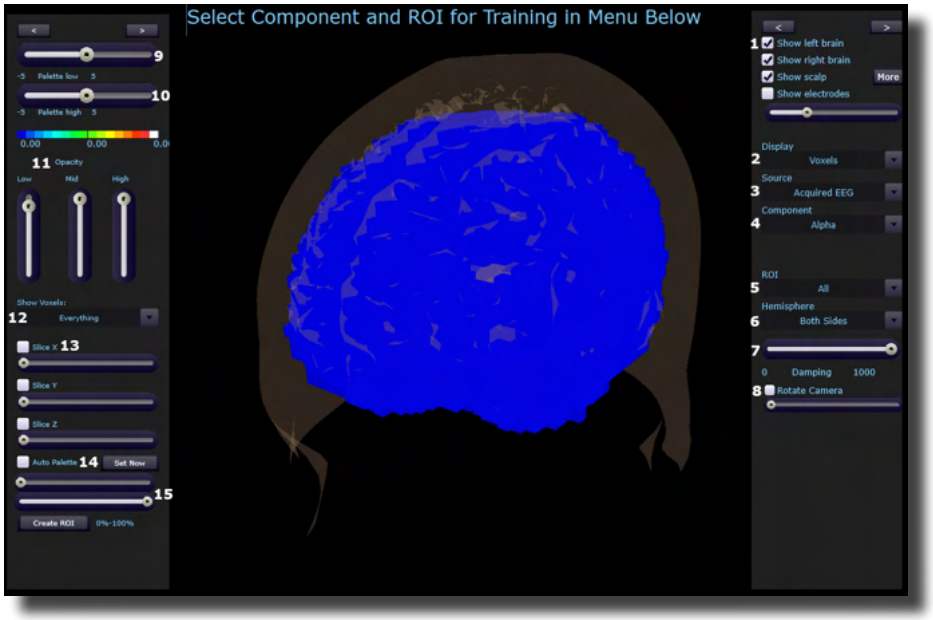


Use: Displays simple information on the ROI that is being viewed in the Live LORETA Projector
Requirements: BrainAvatar LLP
Left-Click Mouse Function: No.
Right-Click Mouse Function (Panel Option): Yes. Allows you to choose whether you are viewing the name or not, as well as the percentage of size on the display.



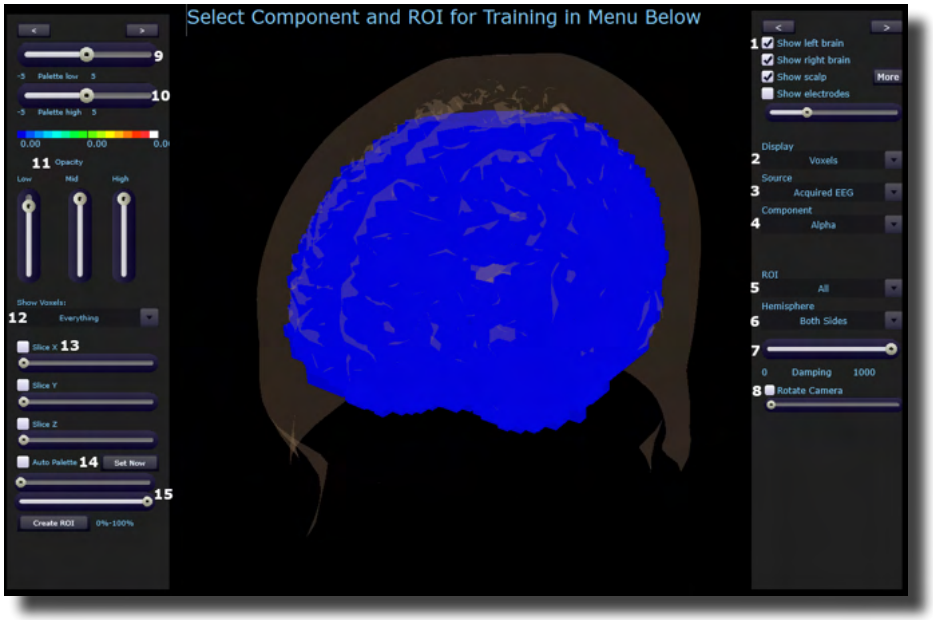
Advanced Displays

Volume Head Map (Optional Purchase)

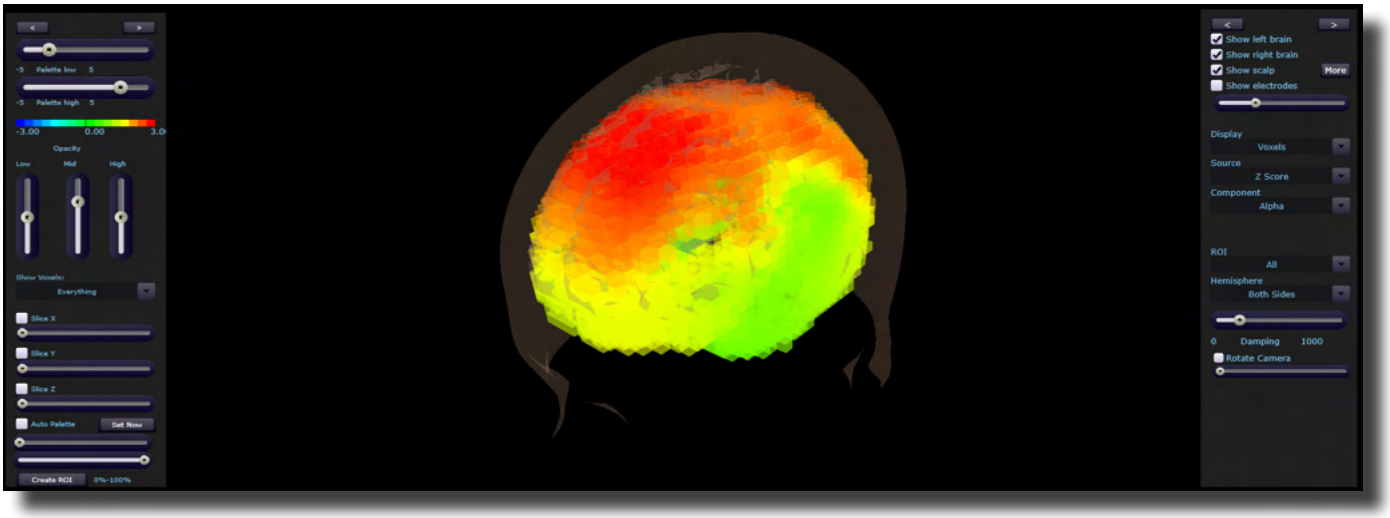


1. **Model Display Section –** Section where you can choose various items to be displayed for the model.
2. **Display Drop-Down Menu –** Drop-Down Menu, where you can choose the type of display for the data. You can choose between Voxels or Dipoles.
3. **Source Drop-Down Menu –** Drop-Down Menu, where you can choose the source of the display information. You can choose between various acquired and Z-Scores sources, based on your Display choice.
4. **Component Drop-Down Menu –** Drop-Down Menu, where you can choose the component to be displayed. You can either choose the Raw EEG, or any of the filtered bands.
5. **ROI Drop-Down Menu –** Drop-Down Menu, where you can choose the Region of Interest to be displayed. For a detailed list of the ROI's, please see the next page.
6. **Hemisphere Drop-Down Menu –** Drop-Down Menu, where you can choose to look at the Left Hemisphere, Right Hemisphere, or both.
7. **Damping Slider –** Slide bar that sets the rate of change for the display.
8. **Rotation Section –** Section that you can set the rotation and speed of rotation for the Head Map.

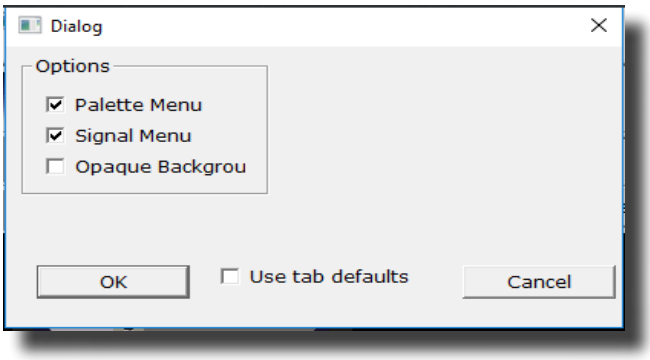
Volume Head Map (Optional Purchase) (Continued)



9. **Palette Low Slider –** Slide bar that sets the low range of the palette for displaying.
10. **Palette High Slider –** Slide bar that sets the high range of the palette for displaying.
11. **Opacity Section –** Slider bars that sets the opacity for the different ranges of data.
12. **Show Voxel Drop-Down -** Drop-Down that will set what will be displayed based off of either the Palette or Percentage Slider
13. **Slice Section –** Section, that you can chose an area for viewing base on X, Y or Z coordinates on the head.
14. **Auto Palette Section –** Section where you can allow the data to set the range that you are investigating, and click the Set Now to set the range to a permanent range.
15. **Percentage Sliders -** Section where you can set the Percentage range that you would like to be displayed for the Show Voxel Drop-Down.



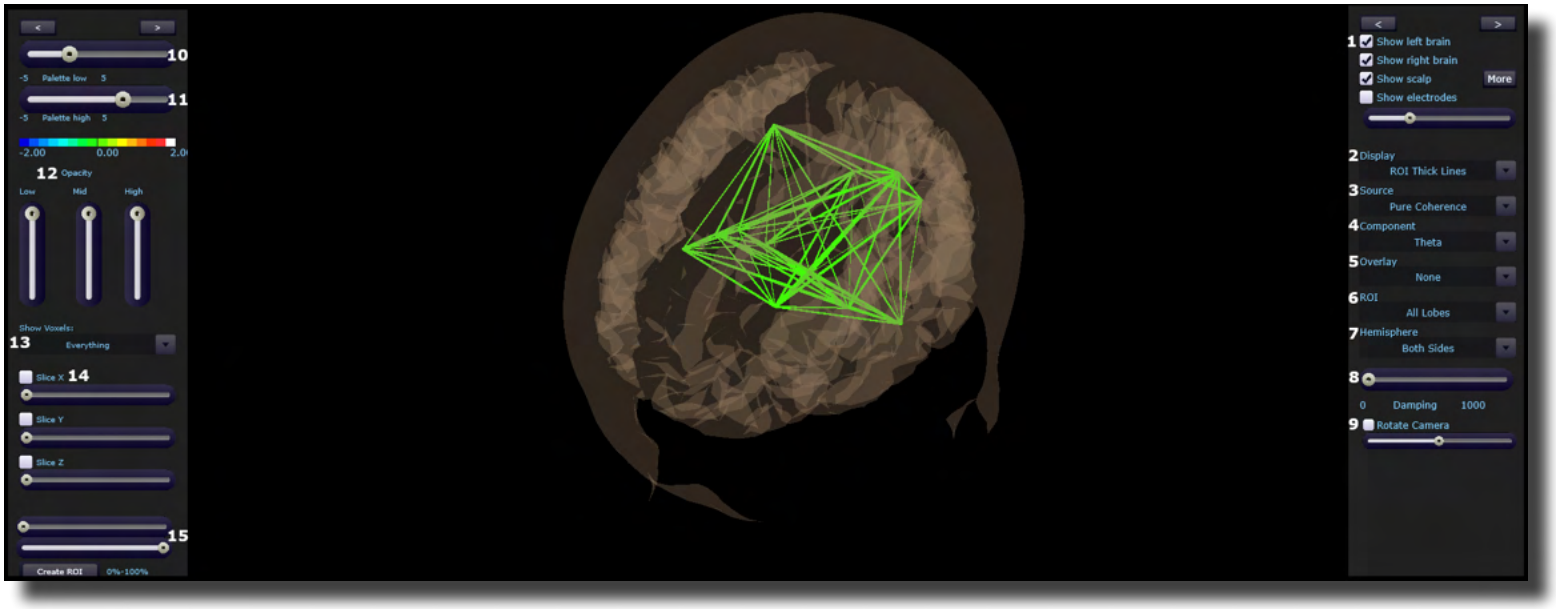
Requirements: Displays only sites selected in the Acquisition Screen, and the LLP Add-on.
Left-Click Mouse Function: Yes. By left-clicking and holding down on the mouse, you can change the displays orientation. Using the Scroll control, will zoom the field in and out.
Right-Click Mouse Function(Panel Option): Yes. Allows you to either hide or display the Palette or Signal menu.



ROI Table

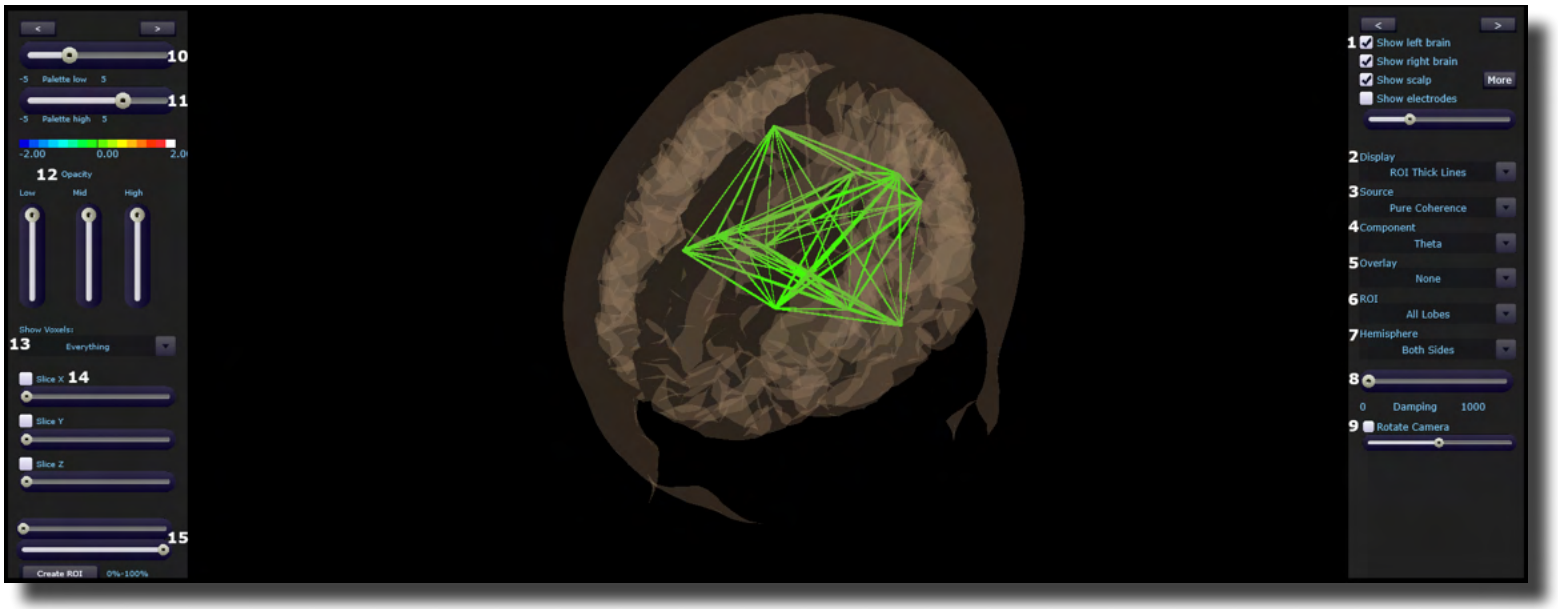
Lobes		
Frontal Lobe	Libic Lobe	Occipital Lobe
Parietal Lobe	Sub-Lobar	Temporal Lobe
	Everything	
Gyrus		
Angular Gyrus	Anterior Cingulate	Cingulate Gyrus
Cuneus	Extra-Nuclear	Fusiform Gyrus
Inferior Frontal Gyrus	Inferior Occipital Gyrus	Inferior Parietal Gyrus
Inferior Temporal Gyrus	Insula	Lingual Gyrus
Medial Frontal Gyrus	Middle Frontal Gyrus	Middle Occipital Gyrus
Middle Temporal Gyrus	Orbital Gyrus	Paracentral Lobule
Parahippocampal Gyrus	Postcentral Gyrus	Posterior Cingulate
Precentral Gyrus	Precuneus	Rectal Gyrus
Sub-Gyral	Subcallosal Gyrus	Superior Frontal Gyrus
Superior Occipital Gyrus	Superior Parietal Lobule	Superior Temporal Gyrus
Supramarginal Gyrus	Transverse Temporal Gyrus	Uncus
Brodmann Areas		
Brodmann Area 1	Brodmann Area 2	Brodmann Area 3
Brodmann Area 4	Brodmann Area 5	Brodmann Area 6
Brodmann Area 7	Brodmann Area 8	Brodmann Area 9
Brodmann Area 10	Brodmann Area 11	Brodmann Area 13
Brodmann Area 17	Brodmann Area 18	Brodmann Area 19
Brodmann Area 20	Brodmann Area 21	Brodmann Area 22
Brodmann Area 23	Brodmann Area 24	Brodmann Area 25
Brodmann Area 27	Brodmann Area 28	Brodmann Area 29
Brodmann Area 30	Brodmann Area 31	Brodmann Area 32
Brodmann Area 33	Brodmann Area 34	Brodmann Area 35
Brodmann Area 36	Brodmann Area 37	Brodmann Area 38
Brodmann Area 39	Brodmann Area 40	Brodmann Area 41
Brodmann Area 42	Brodmann Area 43	Brodmann Area 44
Brodmann Area 45	Brodmann Area 46	Brodmann Area 47
Network Hubs		
Hagmann 1	Hagmann 2	Hagmann 3
Hagmann 4	Hagmann 5	Hagmann 6
Default Mode Network	Central Executive Network	Salient Network

Volume Connectivity Head Map (Optional Purchase)

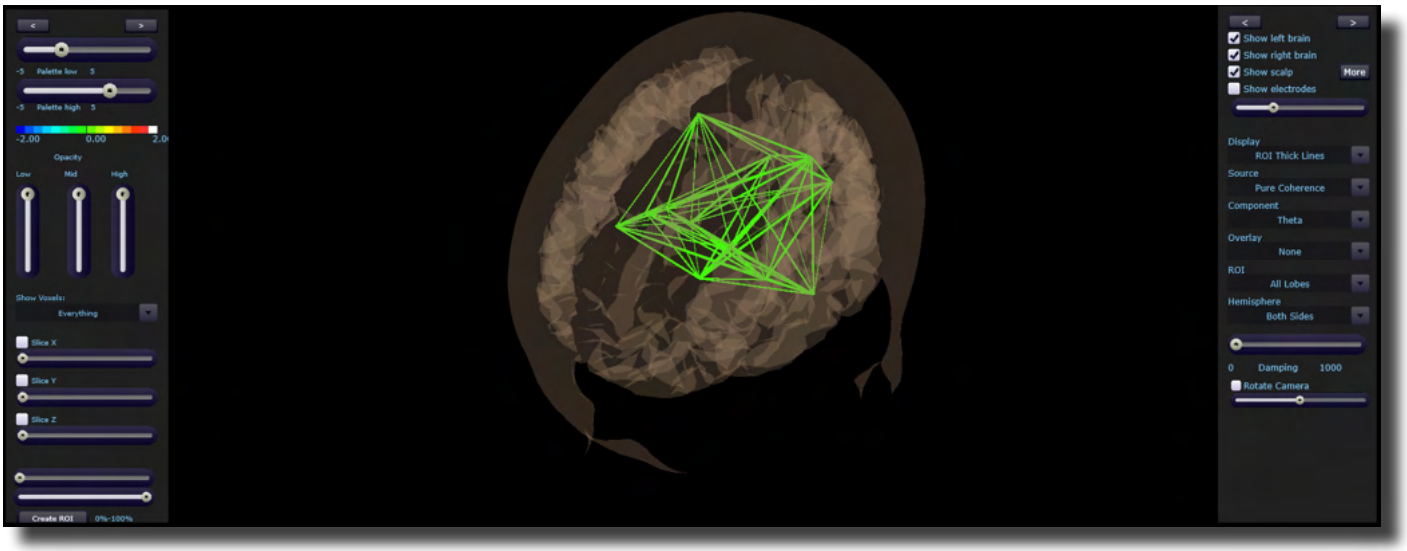


1. **Model Display Section –** Section where you can choose various items to be displayed for the model.
2. **Display Drop-Down Menu –** Drop-Down Menu, where you can choose the type of display for the data. You can choose between Voxels or Dipoles.
3. **Source Drop-Down Menu –** Drop-Down Menu, where you can choose the source of the display information. You can choose between various acquired and Z-Scores sources, based on your Display choice.
4. **Component Drop-Down Menu –** Drop-Down Menu, where you can choose the component to be displayed. You can either choose the Raw EEG, or any of the filtered bands.
5. **Overlay Drop-Down Menu** - Drop-Down Menu, where you can choose what type of Display will be on the Model.
6. **ROI Drop-Down Menu –** Drop-Down Menu, where you can choose the Region of Interest to be displayed. For a detailed list of the ROI's, please see the next page.
7. **Hemisphere Drop-Down Menu –** Drop-Down Menu, where you can choose to look at the Left Hemisphere, Right Hemisphere, or both.
8. **Damping Slider –** Slide bar that sets the rate of change for the display.

Volume Connectivity Head Map (Optional Purchase) (Continued)



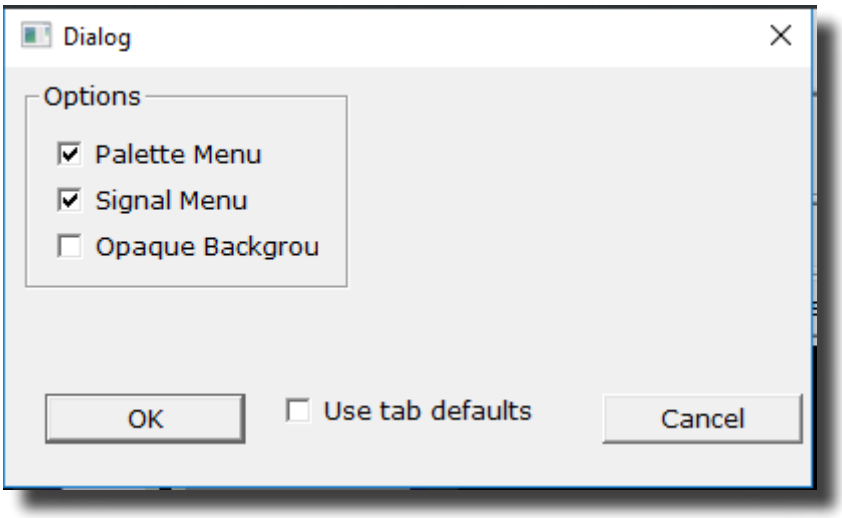
9. **Rotation Section –** Section that you can set the rotation and speed of rotation for the Head Map.
10. **Palette Low Slider –** Slide bar that sets the low range of the palette for displaying.
11. **Palette High Slider –** Slide bar that sets the high range of the palette for displaying.
12. **Opacity Section –** Slider bars that sets the opacity for the different ranges of data.
13. **Show Voxel Drop-Down -** Drop-Down that will set what will be displayed based off of either the Palette or Percentage Slider
14. **Slice Section –** Section, that you can chose an area for viewing base on X, Y or Z coordinates on the head.
15. **Percentage Sliders -** Section where you can set the Percentage range that you would like to be displayed for the Show Voxel Drop-Down.



Requirements: Displays only sites selected in the Acquisition Screen, and the LLP Add-on, and Connectivity Suite Add-on.

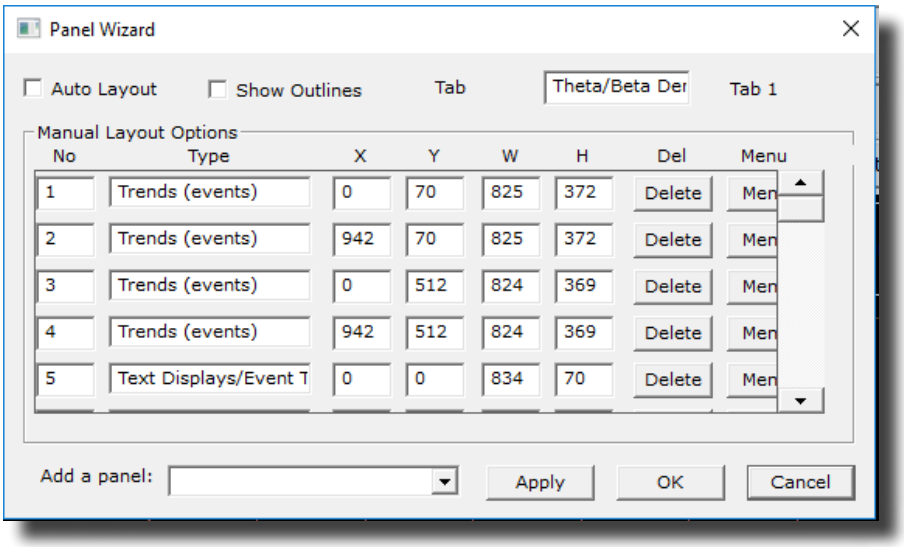
Left-Click Mouse Function: Yes. By left-clicking and holding down on the mouse, you can change the displays orientation. Using the Scroll control, will zoom the field in and out.

Right-Click Mouse Function(Panel Option): Yes. Allows you to either hide or display the Palette or Signal menu.



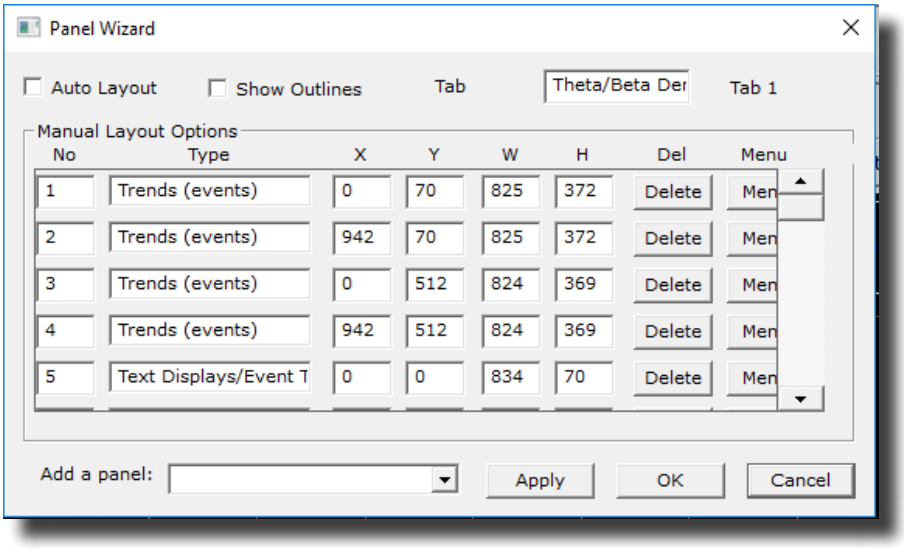
Panel Wizard

Panel Wizard Control Menu Display



1. **Auto Layout Check Box –** Check Box to choose whether or not you want the tab to use the Auto Layout function.
2. **Show Outlines Check Box –** Check Box to choose whether you would like to see the display, or if you would like to view the outlines, so that you can manually move the display box.
3. **Tab Name Box –** Box in which you can view/rename the current tab you are viewing (Coming soon).
4. **Display Type Box –** Display box, that displays the currently selected display type, as well as allows you to change the Display type (Coming soon).
5. **X Axis Box –** Box, in which you can adjust the Display Type's position on the X-Axis for this Tab.
6. **Y Axis Box –** Box in which you can adjust the Display Type's position on the Y-Axis for this Tab.
7. **Width Box –** Box in which you can adjust the width for the particular Display Type on this Tab.
8. **Height Box –** Box in which you can adjust the width for the particular Display Type on this Tab.
9. **Delete Button –** Click to delete the Display Type for this tab
10. **Menu Button –** Click to bring up the Menu for the Display Type. This can also be done, by Right-Clicking the particular Display Type.
11. **Add Box –** Box in which you can add new Display Types.

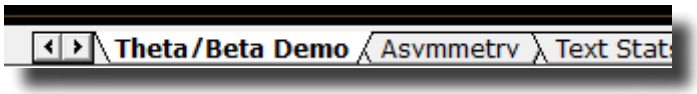
Panel Wizard Control Menu Display (Continued)



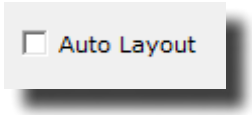
12. **Apply Button –** Click to apply any changes done in the X Axis, Y Axis, Width, and/or Height Boxes.
13. **OK Button –** Click to confirm changes and close the Panel Wizard
14. **Cancel Button –** Click to cancel any changes that have not been applied, and close the Panel Wizard

Using the Panel Wizard

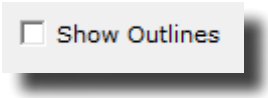
1. From the Training screen, Right-Click on the Tab that you would like to edit. You will have some different options:



   a. **Auto Layout –** In order for you do any type of manual design, this will have to be un-checked. After you have unchecked this, click the OK Button, and re-start Panel Wizard:

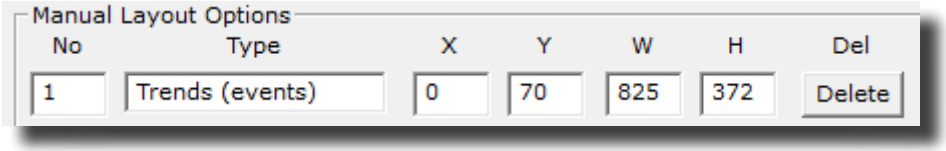


   b. **Show Outlines –** This switches between seeing the display and seeing lines for the displays. When you see the outlines, you can click on the different boxes. This allows you to resize or move a display using your mouse



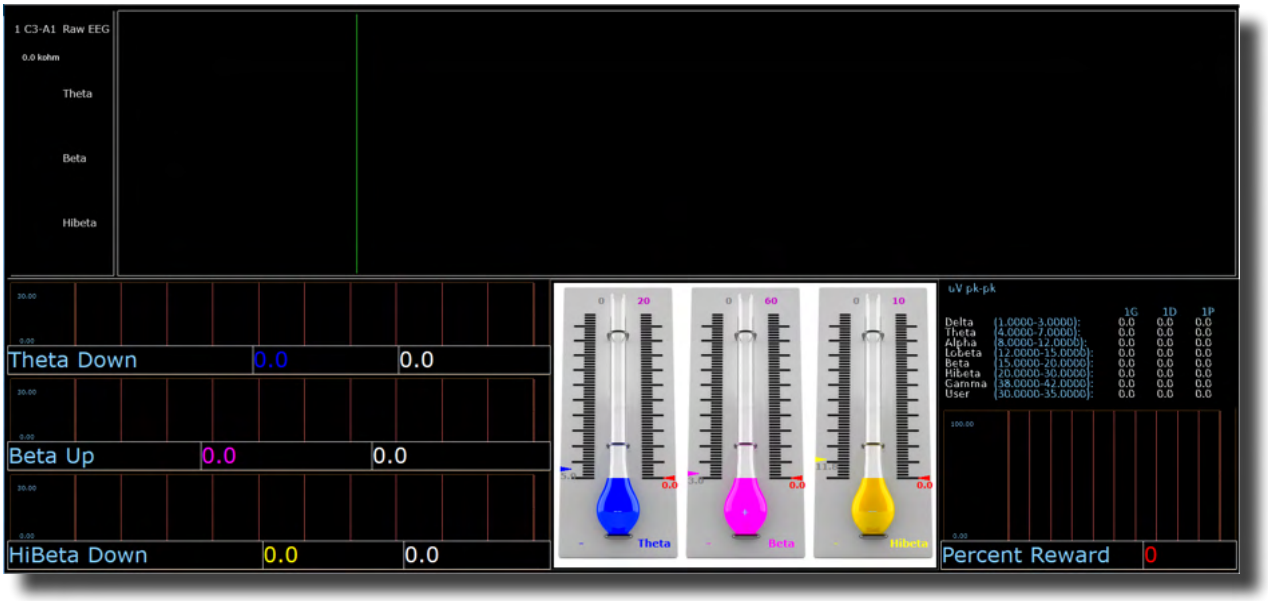
   c. **Add: -** This allows you to add different displays for this tab

   d. **Manual Layout Options –** This allows you to use the X and Y axis to place the display in a particular location, as well as adjust the width and height. When you have entered this information, click Apply to place these items. You can also choose to delete a particular display.

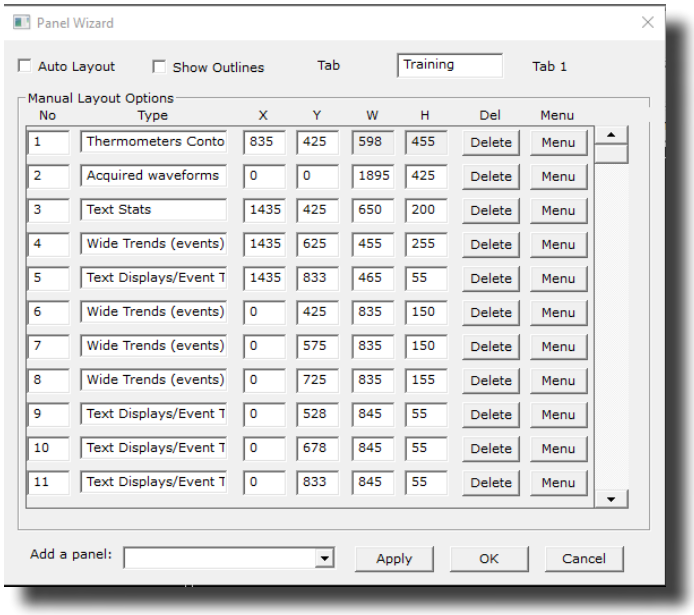


With the Panel Wizard now launched, you can make the adjustments that you would like to adjust.

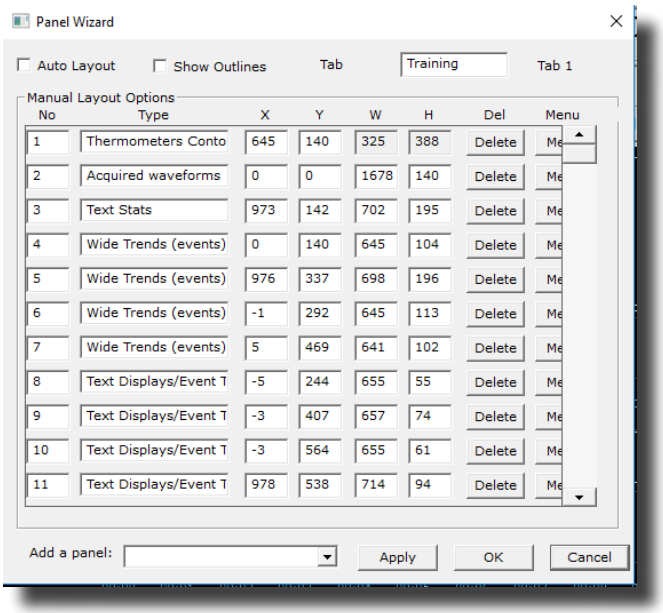
Panel Wizard Resolution Help



1920 X 1080 Resolution Screen Settings



1366 X 768 Resolution Screen Settings

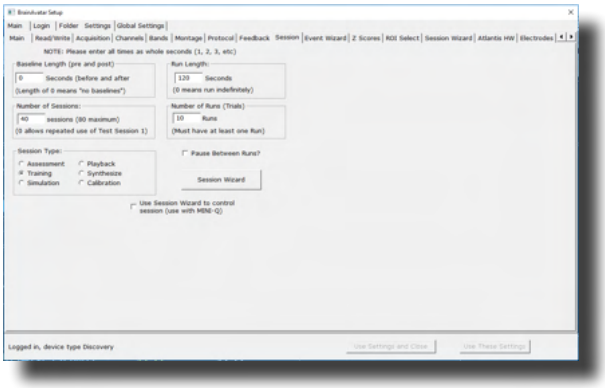


EEG Data Files

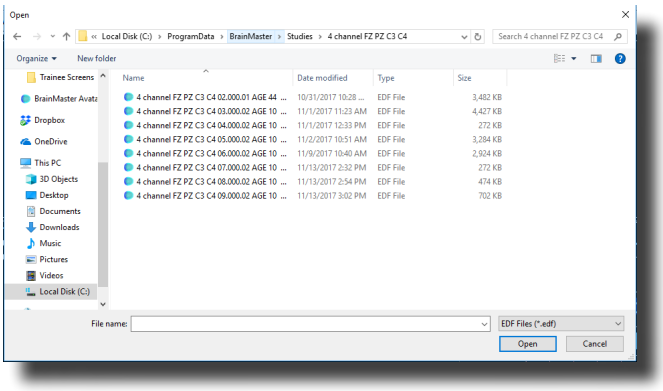
Simple EEG Data File Playback (Session Type Method)

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

1. From the Setup Screen, click the Settings Tab, then the Session Tab. On the Session Tab, change the Session Type to Playback, and click Use Settings and Close. When ready click GO.



2. Use the Open Screen to Navigate to the EDF file that you would like to play.

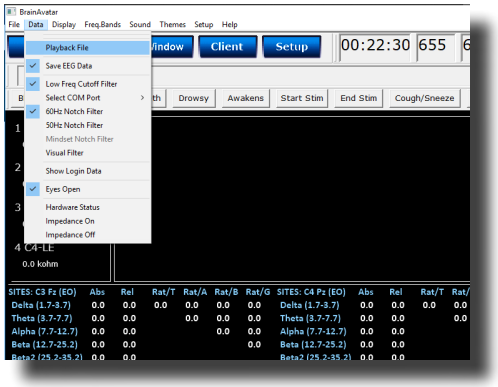


The EDF will now begin to playback. The EDF will operate exactly as live EEG. All displays will react as if live EEG information is coming in.

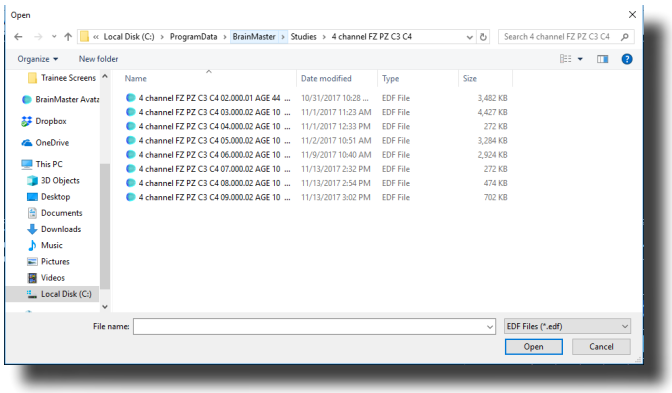
Simple EEG Data File Playback (Playback File Method)

***PLEASE NOTE:** This process can only be done if you have purchased a BrainMaster Clinical License.

1. From the Training Screen, click the Data Tab, and choose the option Playback File.



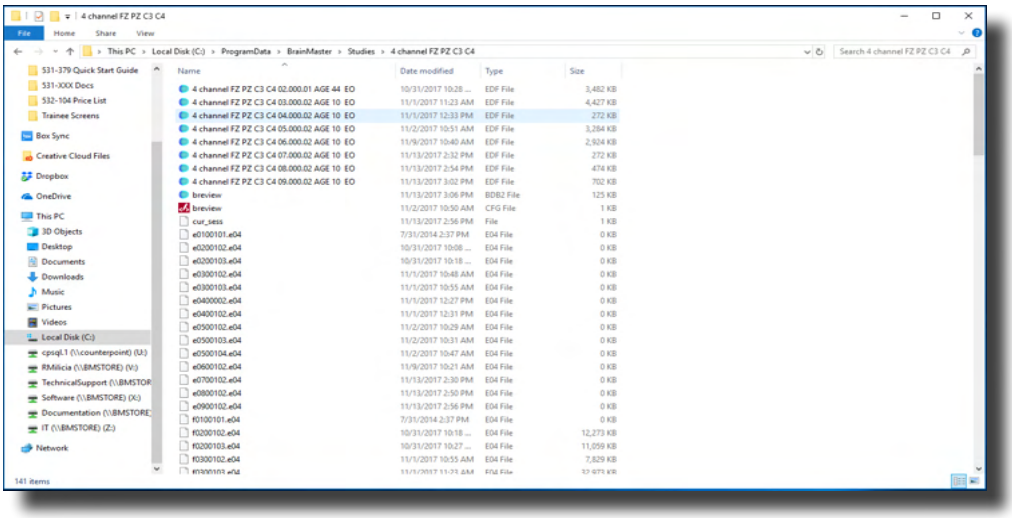
2. Use the Open Screen to Navigate to the EDF file that you would like to play.



The EDF will now begin to playback. The EDF will operate exactly as live EEG. All displays will react as if live EEG information is coming in.

Opening an EEG Data File (Windows/File Explorer)

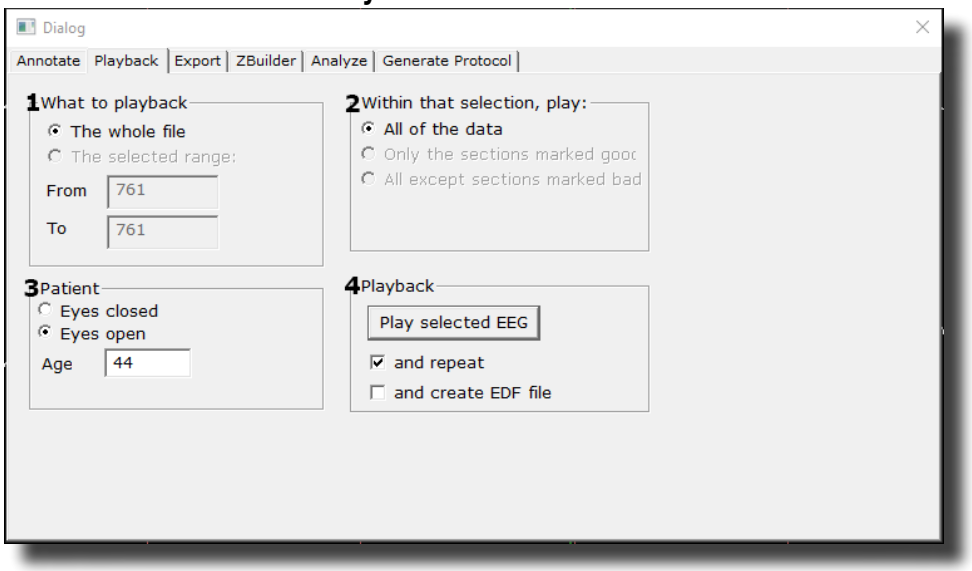
1. Locate the EDF, BDF, or DAT file that you would like to open. When you find this file double-click the file.



The EDF, BDF, or DAT file will now be opened inside the BrainAvatar Software. You can now review this file. By clicking the Playback Button at the bottom, this will allow you to Playback the file.

Review Playback

Playback Control Menu



1. **What To Playback Section –** Section where you can choose what information that you would like to playback

    a. **The Whole File –** Choose this to playback the entire EDF, BDF, or DAT File

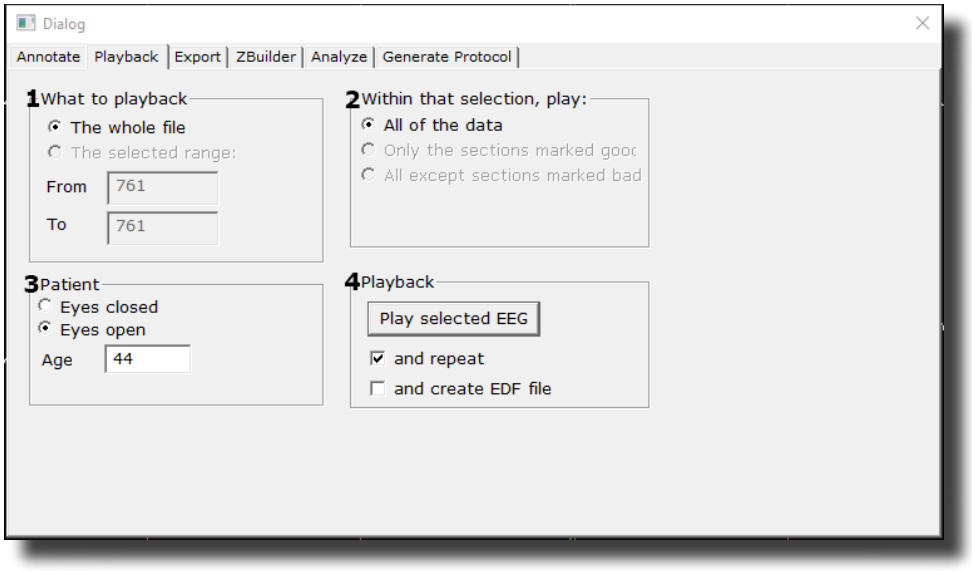
    b. **The Selected Range –** Choose this to playback only the selection area chosen through the mouse

2. **Within that selection, play: Section –** Section where you can set a more specific requirement of what you will playback

    a. **All of the Data –** Will playback all of the Data defined by the What To Playback Section

    b. **Only the sections marked good –** Will playback all of the sections that have been annotated good that are within the What To Playback Section. This will be grayed out, if there are no sections marked good within the Playback section

    c. **All except sections marked bad –** Will playback all of the sections that have not been annotated as bad that are within the What To Playback Section. This will be grayed out, if there are no sections marked bad within the Playback section



3. **Patient Section –** Section where you can set various Patient Information (This will by default choose the information that was saved in the EDF File)
    a. **Eyes Condition –** This will allow you to select whether this is Eyes Opened or Eyes Closed Data.
    b. **Age –** This will allow you to set the Age of the Patient whose file you are going to playback.
4. **Playback Section**
    a. **Play selected EEG Button –** Plays back the EDF, BDF, or DAT File based on the settings chosen
    b. **And repeat check box –** Will repeat the playing back of the file until the software is stopped.
    c. **And create EDF File Check box –** This will create a new EDF File of the played back EDF.

Data Playback in the Review Screen (Playback button)

1. After you have opened the EDF, BDF, or DAT file in the BrainAvatar Software, to playback, click the Playback button at the bottom of the screen.

The EEG Data File will now begin to playback in the currently opened Patient Folder. The EEG Data File will operate exactly as live EEG. All displays will react as if live EEG information is coming in.

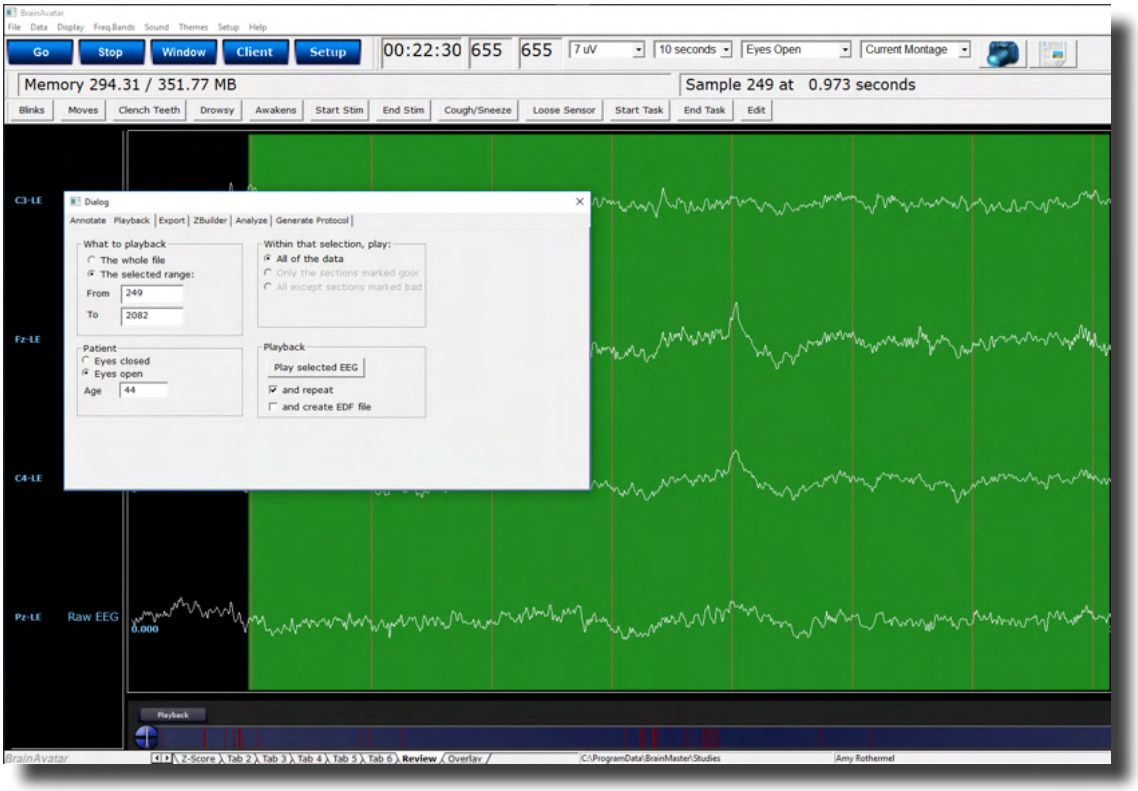
Playing back a section of an EDF File

1. Highlight the EEG that you would like to use by holding the Left-Mouse button down, and moving the mouse. This will bring up the Panel Options Menu. On the Panel Options, you have multiple options

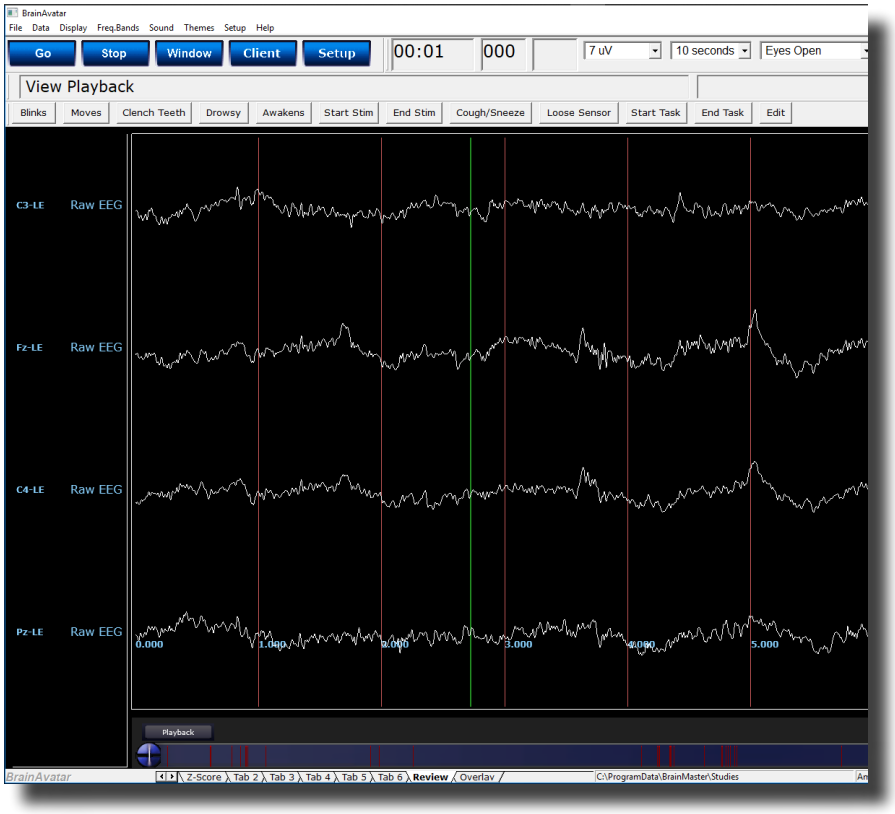
    a. **Data range:** - This will allow you to choose whether you would like to playback the area selected, or to look at the entire EDF File.

    b. **What to process:** - If the whole file is selected, or you have selected areas that have annotations then you can choose either choose to playback the entire file, Sections marked good, or sections not marked bad.

    c. **Playback:** - Depending on the information chosen above, you can play what you have selected, and choose to either repeat the playback, or simply playback one time.

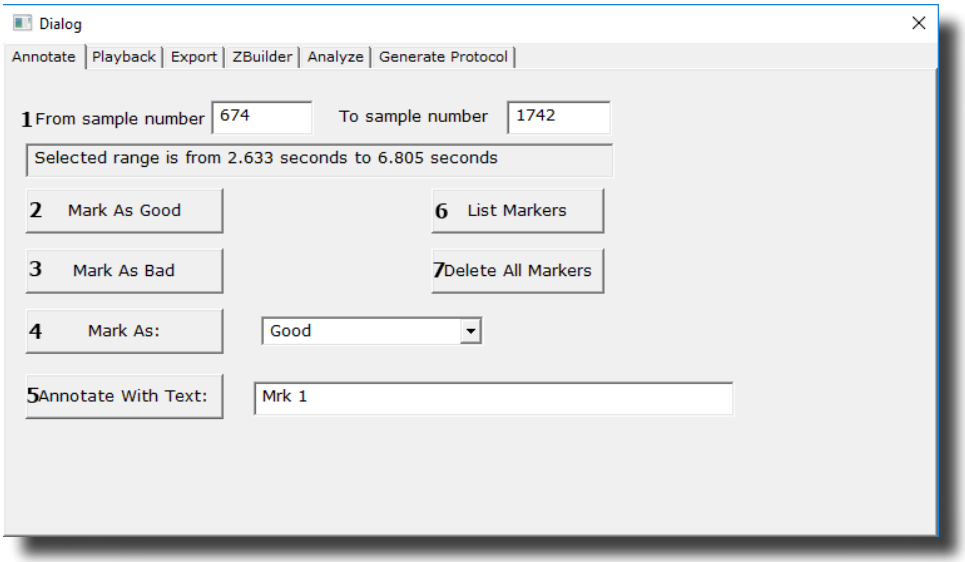


This will now be playing back the EDF file based on the selection that you chose to play. You will tell this is happening by seeing a green line moving across the Review Screen.



EDF Annotation

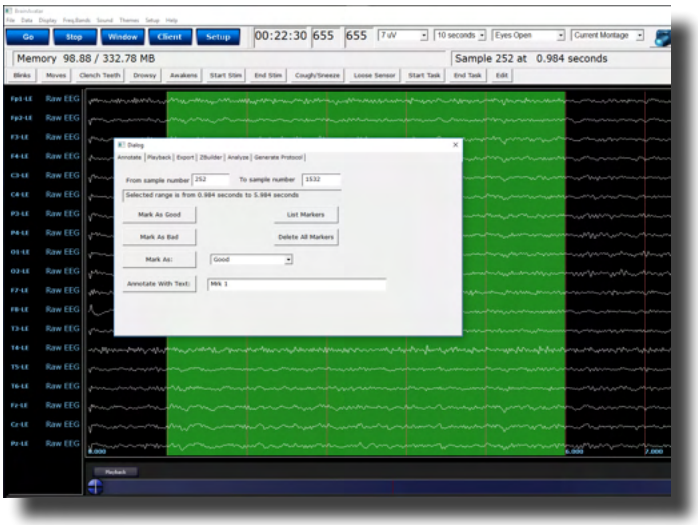
Annotation Control Menu



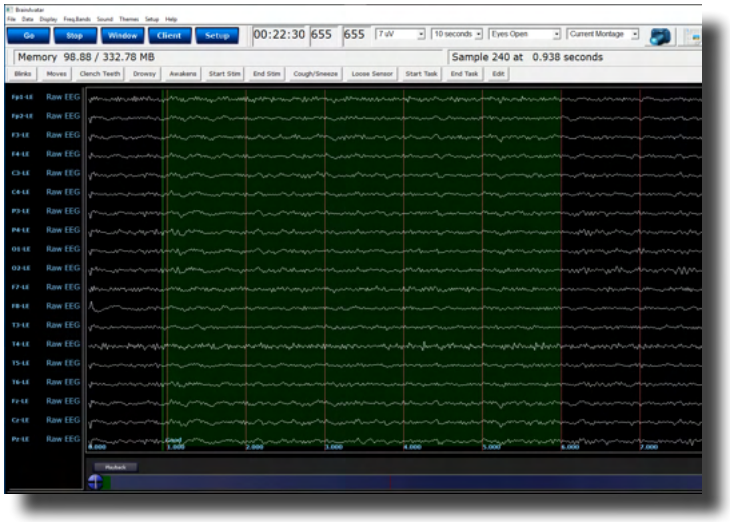
1. **Selected Data Section** – Section that displays the data that has been selected. It is displayed in the Sample number that has been selected, as well as the Seconds that have been selected. You can use the Samples to change the data that has been selected.
2. **Mark As Good Button** – Click this to create a Green highlighted section that will cover the area defined in the Selected Data Section. It will also Annotate this section with a Label Good.
3. **Mark Bad Button** – Click this to create a Red highlighted section that will cover the area defined in the Selected Data Section. It will also Annotate this section with a Label Good.
4. **Mark As: Button** – Click this to create a highlighted section that will cover the area defined in the Selected Data Section, and is based on the type of labeling chosen. It will also Annotate this section with a Label based on the type of labeling chosen
    a. **Good –** Green Highlight. Good Label
    b. **Bad –** Red Highlight. Bad Label
    c. **Artifact –** Blue Highlight. Artifact Label
    d. **Eye Blink –** Blue Highlight. Eye Blink Label
5. **Annotate with Text: Button -** Click this to create a Blue highlighted section that will cover the area defined in the Selected Data Section. It will also Annotate this section with the Label defined in the Text box next to the button.
6. **List Markers Button –** Button that Displays the Labels, where they can be found and allows you to edit these labels.
7. **Delete All Markers Button -** Button that will delete all Markers in have been added to an EDF.

Annotating an EDF

1. Highlight the EEG that you would like to use by holding the Left-Mouse button down, and moving the mouse. This will bring up the Panel Options Menu. On the Panel Options, click the type of annotation that you would like to use.

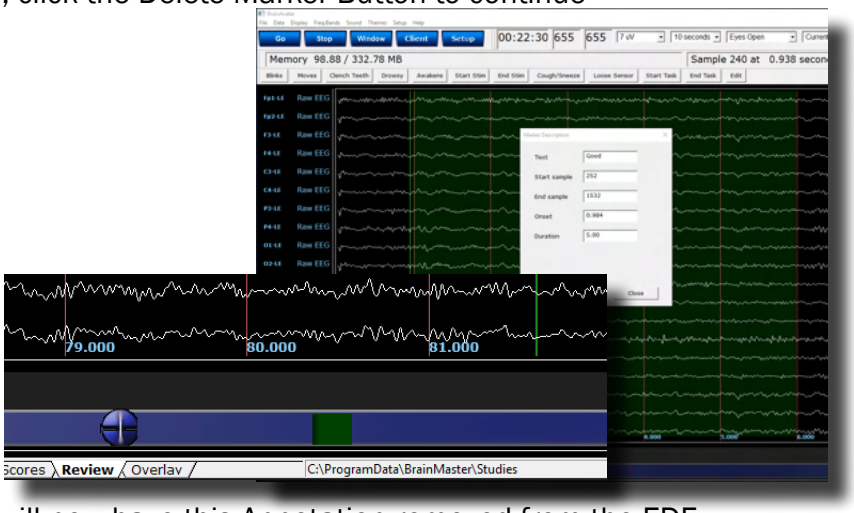


The EDF File will now have this Annotation placed on the EDF. You will be able to tell that this has been annotated, by seeing the EEG area will now be highlighted, as well as labeled at the bottom.

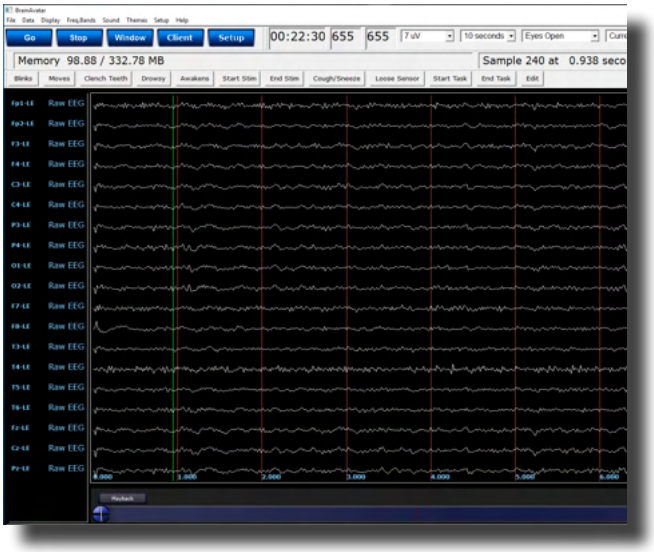


Deleting an Annotation (Review Tab)

1. On the bar at the bottom of the Review screen, locate the Annotation section you would like to delete. Once it is found, right-click on this annotation to bring up the Marker Description Menu. To delete, click the Delete Marker Button to continue

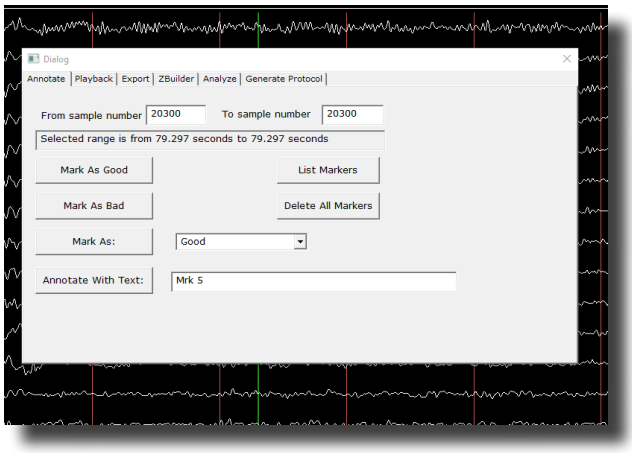


The EDF File will now have this Annotation removed from the EDF.

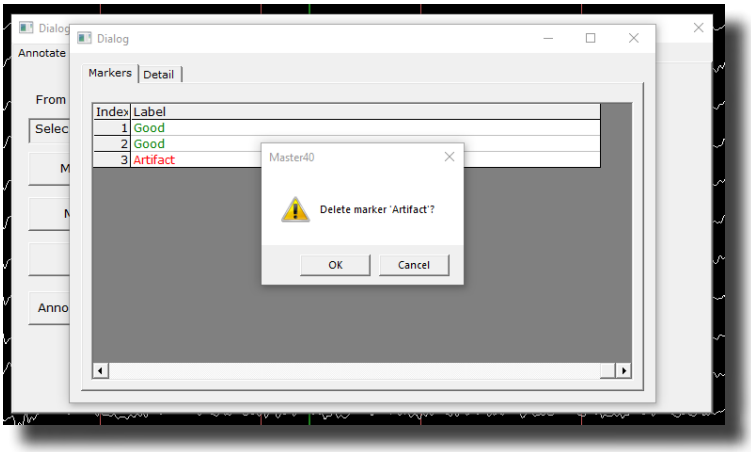


Deleting an Annotation (Review Menu)

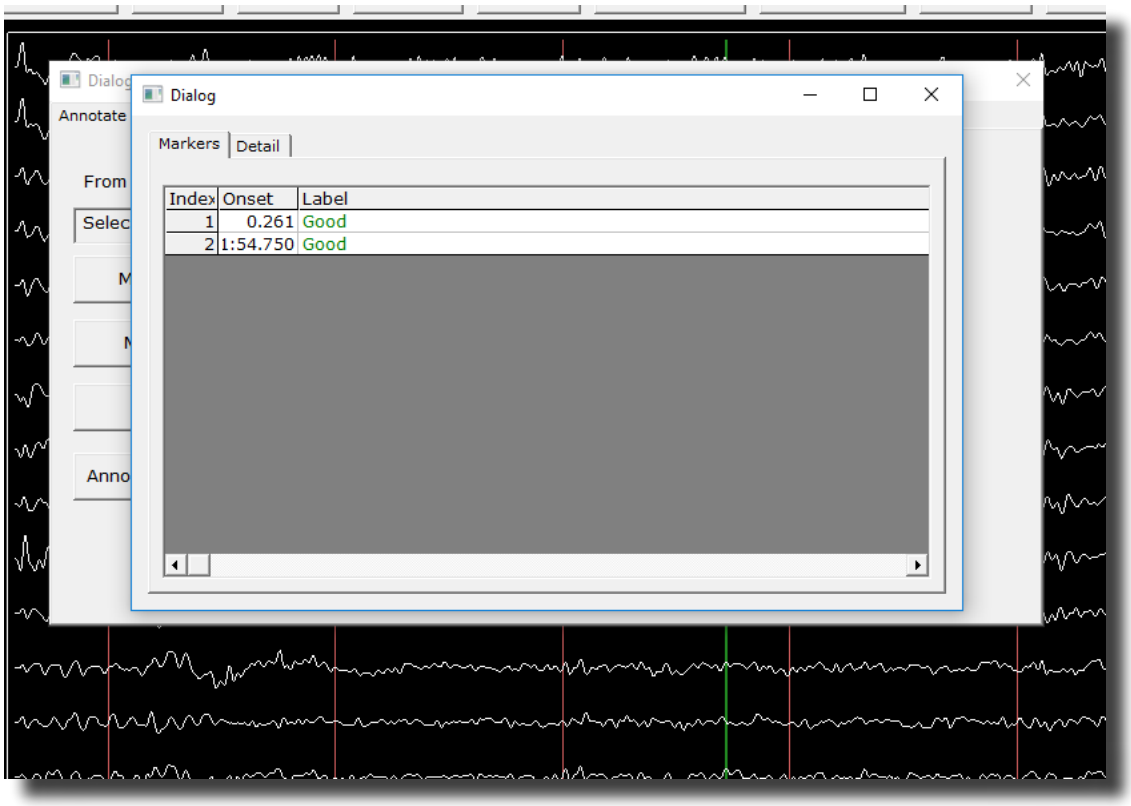
1. Open the Review Menu by either Double-clicking the anywhere in the EEG that you are reviewing or using the left mouse and selecting a selection of EEG. After doing this, the menu will open. Navigate to the Annotate Tab. If you would like to remove all Markers. Click the Delete all Markers Button. Or, if you would like to pick and choose, then click the List Markers Button



2. On the Marker Menu, move your mouse on the Marker you would like to delete and double-click with the Mouse. This will make a menu appear asking if you would like to delete the Marker. Click OK to continue

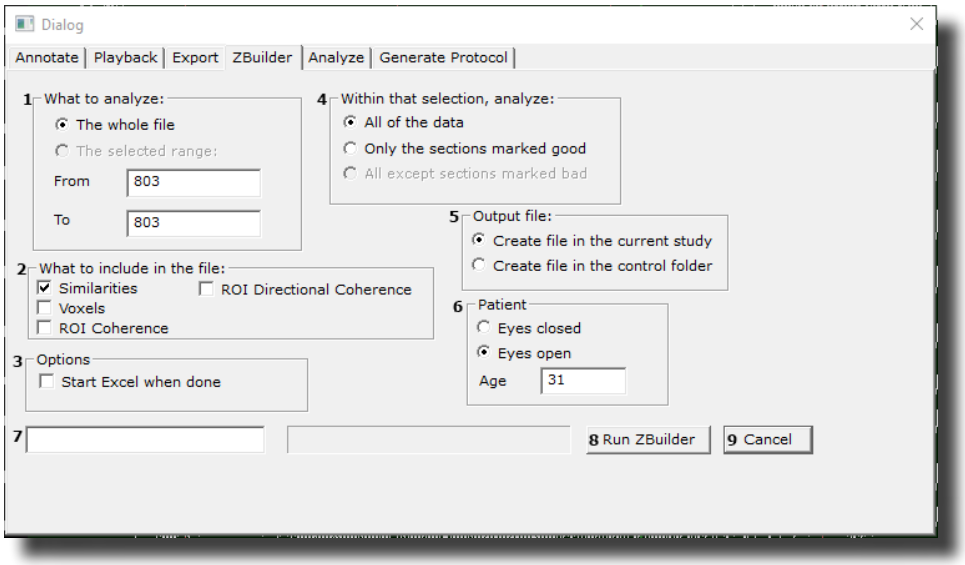


The EDF File will now have this Annotation/s removed from the EDF. You will be able to know that this is complete by viewing the List Markers Menu, and seeing the markers that were deleted are no longer listed.

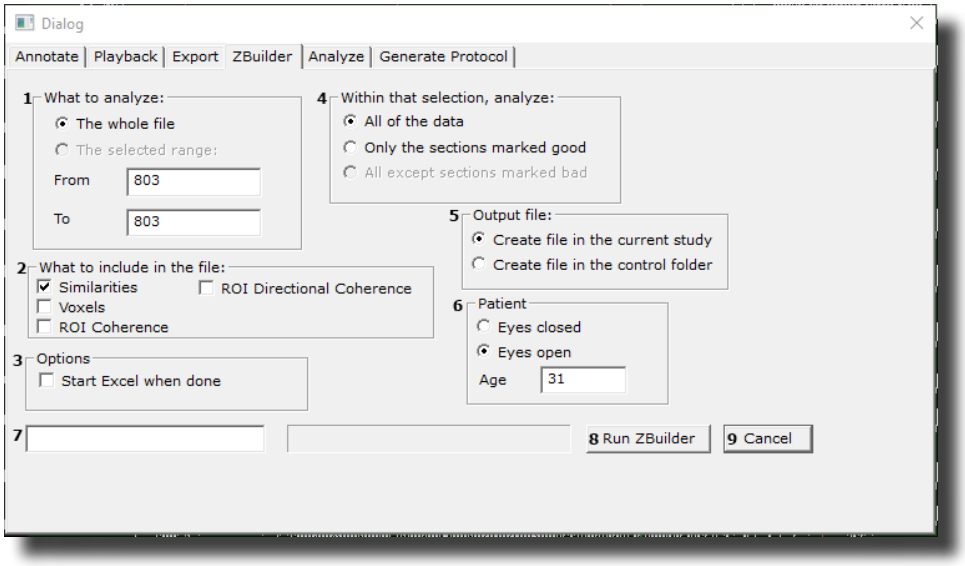


ZBuilder

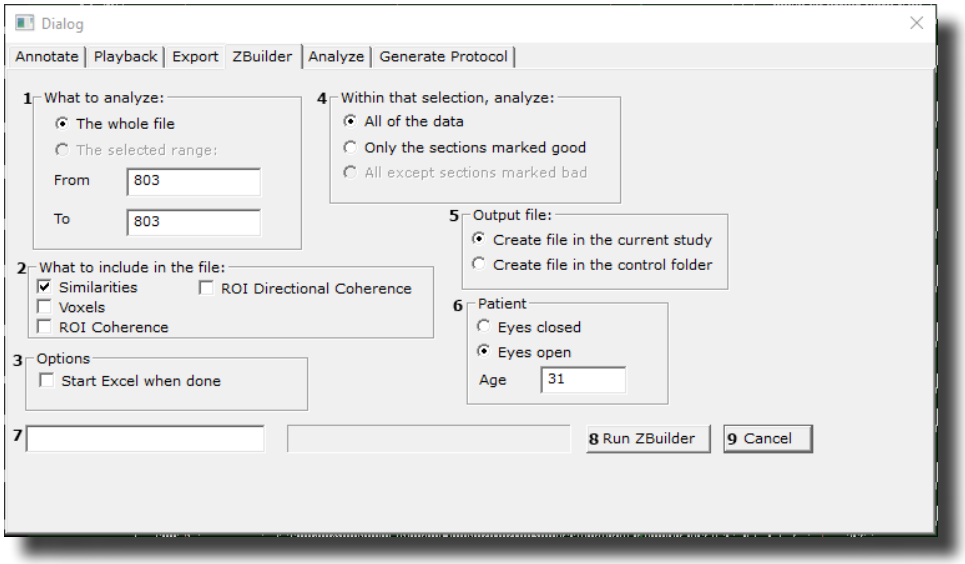
ZBuilder Control Menu



1. **What To Playback Section –** Section where you can choose what information that you would like to process for the ZBuilder File
    a. **The Whole File –** Choose this to process the entire EDF, BDF, or DAT File
    b. **The Selected Range –** Choose this to process only the selection area chosen through the mouse
2. **What to include in the file: Section –** Section where you can choose what information will be included in the file
    a. **Similarities –** This will include all forms of cross-channel communication for the 19 channels
    b. **Voxels –** This will include the Power information for the 6,239 Voxels
    c. **ROI Coherence -** This will include all of possible ROI Connectivity Combinations
    d. **ROI Directional Coherence -** This will included all of the Possible ROI Directional Coherence Metrics
3. **Options Section –** Section where you can set different Options for the software to do after ZBuilder has been run
    a. **Start Excel when done Checkbox –** Check to have Excel to open the completed file after this has been processed.



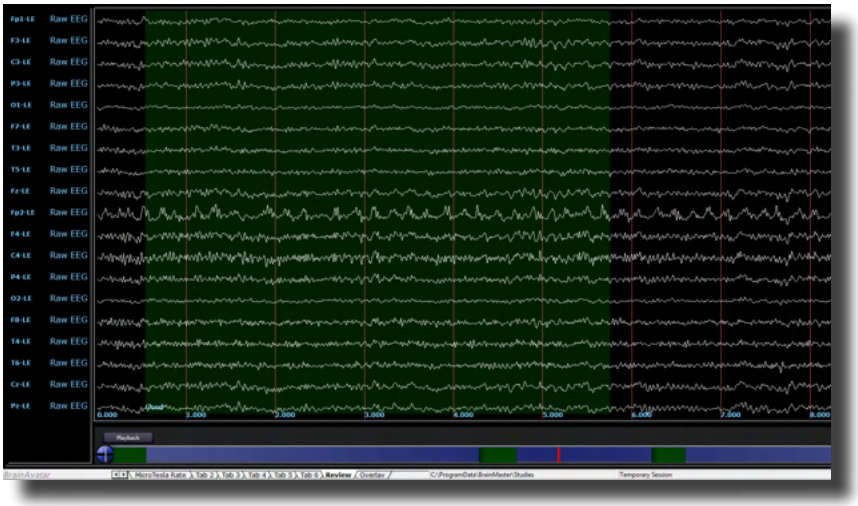
4. **Within that selection, analyze: Section –** Section where you can set a more specific requirement of what you will playback
    a. **All of the Data –** Will pprocess all of the Data defined by the What To Analyze Section
    b. **Only the sections marked good –** Will process all of the sections that have been annotated good that are within the What To Analyze Section. This will be grayed out, if there are no sections marked good within the Analyze section
    c. **All except sections marked bad –** Will process all of the sections that have not been annotated as bad that are within the What To Analyze Section. This will be grayed out, if there are no sections marked bad within the Analyze section
5. **Output file: Section** – Section where you can set the Output file name/Destination.
    a. **Create file in the current study –** Creates a file named ZBuilderEO or ZBuilder EC in the current Study Folder that you opened the EDF, BDF, or DAT file for Review in.
    b. **Default file name in the control folder -** Creates a file named ZBuilderEO or ZBuilderEC in the directory c:\ProgramData\BrainMaster\Control.



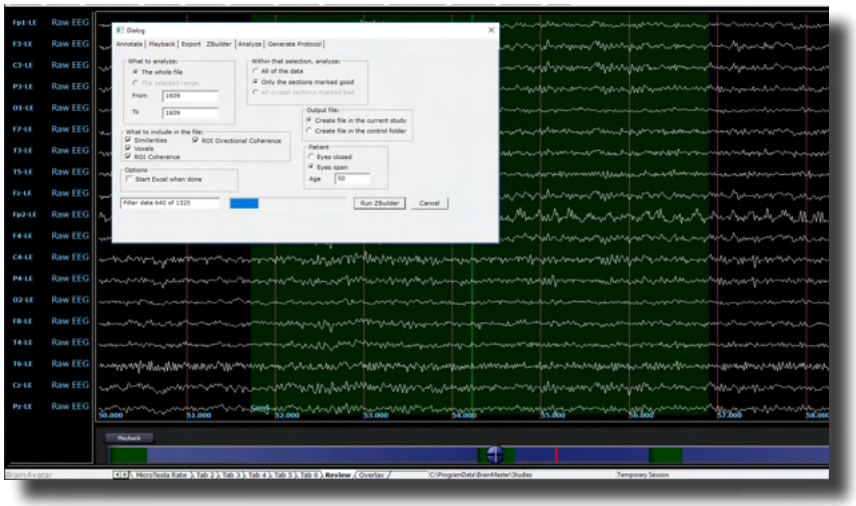
6. **Patient Section–** Section where you can set Patient information if it is different than what was contained in the file, or was not in the file.
    a. **Recording Condition –** Set the Recording condition to Eyes Open (EO) or Eyes Closed (EC) that the Z-Builder file will contain
    b. **Age –** Set the Age that the Z-Builder file will contain.
7. **Display Section -** Displays the status of the Z-Builder production when the Z-Builder is producing a file.
8. **Run ZBuilder Button –** Click to create A ZBuilder File based on the information selected.
9. **Cancel Button –** Click to cancel the ZBuilder File.

Creating a Z-Builder File

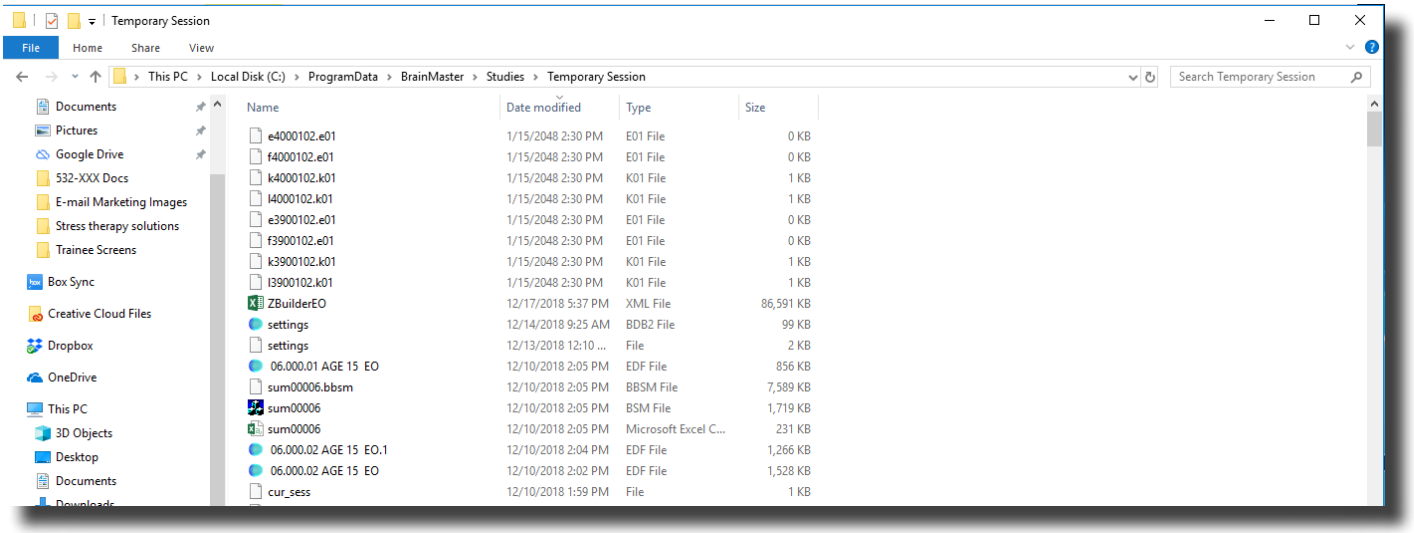
1. Open the File that you would like to work with.Under the Review Tab, you will annotate based off of the instructions from the EDF Annotation Section.



2. When completed, either Double-Click in the EEG, or Hold down the Left-Click on the mouse, and select a section of data. This will bring up the Panel Options Menu. Navigate to the ZBuilder Tab, and use this menu to set the ZBuilder Settings as needed. When completed, click the Run Z-Builder Button.



You have now created a ZBuilder File. You will be able to tell this has been created, by using Windows Explorer to locate the file in the directory that you saved this in(if not specified, then it will be saved in the study folder that the EDF File is opened in).



Sample ZBuilder File & Layout

Description Section

ZBuilder rev	1	4.7.5.657									
Date Created	2	2018/12/17 17:37:15									
From file	3	C:\Users\RMilicia\Desktop\TestAcqusition 10.000.05 AGE 50 EO.edf									
Sample1	4	19359									
Sample2	5	20576									
# Samples	6	1217									
Age	7	50.00000									
Reserved3	8										
Reserved4	9										
Reserved5	10										
Reserved6	11										
Reserved7	12										
Reserved8	13										
Filters	14	Raw EEG	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma	User	
Filt Active	15	1	1	1	1	1	1	1	1	1	0
Flow	16	0	1	4	8	12	15	20	38	30	
Fhigh	17	0	3	7	12	15	20	30	42	35	
Order	18	6	6	6	6	6	6	6	6	6	

1. **ZBuilder Revision –** Informs you of which version of the BrainAvatar Software was used to create the ZBuilder File.
2. **Date Created -** Lists the Date Created of the ZBuilder File
3. **From File -** Informs you of What EEG File was used to create the ZBuilder File
4. **Sample1 -** Informs you the Starting Sample Number of the last scanned section of the EDF
5. **Sample2 -** Informs you the Ending Sample Number of the last scanned section of the EDF
6. **# Samples -** Informs you the total number of samples of the last scanned Section of the EDF
7. **Age -** Informs you the Age that was utilized for the ZBuilder File
8. **Reserved3 -** Reserved for future use
9. **Reserved4 -** Reserved for future use
10. **Reserved5 -** Reserved for future use
11. **Reserved6 -** Reserved for future use
12. **Reserved7 -** Reserved for future use
13. **Reserved8 -** Reserved for future use
14. **Filters -** Lists the Names of the filtered bands that were included in the ZBuilder File
15. **Filt Active -** Lists whether a Filtered wave form is active or not. 1 means that it is Active and 0 means that it is not active

ZBuilder rev	1	4.7.5.657									
Date Created	2	2018/12/17 17:37:15									
From file	3	C:\Users\RMilicia\Desktop\TestAcqusition 10.000.05 AGE 50 EO.edf									
Sample1	4	19359									
Sample2	5	20576									
# Samples	6	1217									
Age	7	50.00000									
Reserved3	8										
Reserved4	9										
Reserved5	10										
Reserved6	11										
Reserved7	12										
Reserved8	13										
Filters	14	Raw EEG	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma	User	
Filt Active	15	1	1	1	1	1	1	1	1	1	0
Flow	16	0	1	4	8	12	15	20	38	30	
Fhigh	17	0	3	7	12	15	20	30	42	35	
Order	18	6	6	6	6	6	6	6	6	6	

16. **Flow -** Defines the Low Frequency for the Filtered Waveform
17. **FHigh -** Defines the High Frequency for the Filtered Waveform
18. **Order -** Defines What Filter Order was used for the Filtered Waveform

Scalars Section

Channel 1	Value 2	Raw EEG 3	Delta
	FLOW	0	1
	FHIGH	0	3
Fp1	MEAN.01	11.40293	2.21464
	STD.01	7.42870	1.22645
	MEANL.01	0.90842	0.20768
	STDL.01	0.44967	0.60558
	OMEAN.01	132.50620	23.64983
	MIN.01	-45.65348	-45.65348
	MAX.01	37.35285	37.35285
	MEANF.01	0.00000	6.03470
	STDF.01	0.00000	0.64583
	MEANMF.01	0.00000	1.77104
	STDMF.01	0.00000	0.10426

1. **Channel Section** – This section will display the labeling for all of the Channels that have been collected from using the ZBuilder system.
2. **Value Section** – This section will display the label for the information that has been collected in the Frequency Band Section
    a. **FLOW** – Also known as Frequency Low. This is the lowest range of the frequency band
    b. **FHIGH** – Also known as Frequency High. This is the highest range of the frequency band.
    c. **MEAN.X** – This is the average of Amplitude for the particular band, where "X" is that particular Channel number.
    d. **STD.X** – This is the Standard deviation of the Amplitude for the particular band, where "X" is that particular Channel number.
    e. **MEAN_L.X** – This is the Log of the average of amplitude for the particular band, where "X" is that particular Channel number.
    f. **STD_L.X** – This is the Log of the Standard Deviation of the amplitude for the particular band, where "X" is that particular Channel number.
    g. **MIN.X** – This is the minimum value seen for the particular band, where "X" is that particular Channel number.

Channel 1	Value 2	Raw EEG 3	Delta
	FLOW	0	1
	FHIGH	0	3
Fp1	MEAN.01	11.40293	2.21464
	STD.01	7.42870	1.22645
	MEANL.01	0.90842	0.20768
	STDL.01	0.44967	0.60558
	OMEAN.01	132.50620	23.64983
	MIN.01	-45.65348	-45.65348
	MAX.01	37.35285	37.35285
	MEANF.01	0.00000	6.03470
	STDF.01	0.00000	0.64583
	MEANMF.01	0.00000	1.77104
	STDMF.01	0.00000	0.10426

h. **MAX.X** – This is the maximum value seen for the particular band, where "X" is that particular **Channel number.**

i. **MEANF.X** – This is the percent of power for the particular band over the entire frequency range, where "X" is that particular Channel number.

j. **STDF.X** – This is the Standard Deviation of the percent of energy for that particular band, where "X" is that particular Channel number.

3. **Frequency Section** – This section will show all bands (as defined by the Which Filters to use Section), and their collected information.

Similarities Section

Phase Similarity 1	Fp1	F3	C3	P3	O1	F7
Fp1 2		4 0.59970	0.39581	0.27584	0.27137	0.64357
F3	3 0.27043		0.67634	0.43348	0.24508	0.67370
C3	0.28471	0.22791		0.73297	0.41027	0.45238
P3	0.27387	0.25451	0.20043		0.61431	0.28055
O1	0.28111	0.25873	0.29121	0.24105		0.19090
F7	0.27351	0.19526	0.26441	0.26124	0.24051	
T3	0.30854	0.27933	0.22592	0.27641	0.30017	0.29294
T5	0.28137	0.27958	0.28825	0.25914	0.23644	0.29733
Fz	0.25218	0.13460	0.27368	0.25481	0.25860	0.23910

PLEASE NOTE: There will be a Tab for each Waveform. In order to see this information, you will have to see them individually.

1. **Similarity Type** – Displays the type of Similarty being viewed. There are seven (7) different types looked at.
    a. **Phase Similarity**
    b. **Training Coherence**
    c. **Correlation**
    d. **Phase Classic**
    e. **Pure Coherence**
    f. **Comodulation**
    g. **Asymmetry**
2. **Site Locations** – Shows the different locations that were used in the ZBuilder.
3. **Mean Information** – The Bottom-Half of the readings gives you the Log of the Average amplitude for the particular site combination.
4. **Standard Deviation Information** – The Top-Half of the readings gives you the Log of the standard deviation of amplitude for the particular site combination.

Band Ratios Section

Channel 1	Value 2	Delta/Theta 3	Delta/Alpha	Delta/Lobeta	Delta/Beta
Fp1	MEANL.01	0.13367	0.15673	0.28947	0.10808
	STDL.01	0.43137	0.46197	0.39712	0.49618
F3	MEANL.02	-0.05553	-0.09732	0.20998	-0.09504
	STDL.02	0.39622	0.38859	0.46349	0.42809
C3	MEANL.03	0.01737	-0.04601	0.15296	-0.12898
	STDL.03	0.39718	0.40537	0.39239	0.45731
P3	MEANL.04	0.02333	0.02129	0.10588	-0.10615
	STDL.04	0.38589	0.35589	0.40083	0.43698

1. **Channel Section** – This section will display the labeling for all of the Channels that have been collected from using the ZBuilder system.
2. **Value Section** – This section will display the label for the information that has been collected in the Frequency Band Section
    a. **MEANL.X** – This is the Log of the average of Amplitude for the band ratio, where "X" is that particular Channel number.
    b. **STDL.X** – This is the Log of the Standard deviation of the Amplitude for the band ratio, where "X" is that particular Channel number.

Ratio Section – This section will show all band ratios (as defined by the Which Filters to use Section), and their collected information

Voxels Section

Voxel Number 1	Raw EEG.AVG 2	Raw EEG.STD	Raw EEG.AVGL	Raw EEG.STDL	Delta.AVG	Delta.STD	Delta.AVGL	Delta.STDL
1	4.373	0	1.186	0.446	0.814	0	-0.319	0.703
2	4.516	0	1.214	0.447	0.846	0	-0.286	0.705
3	4.609	0	1.232	0.447	0.873	0	-0.259	0.706
4	4.156	0	1.14	0.451	0.801	0	-0.331	0.701
5	4.277	0	1.165	0.45	0.826	0	-0.306	0.702
6	4.387	0	1.188	0.449	0.853	0	-0.279	0.703
7	3.965	0	1.096	0.46	0.796	0	-0.336	0.7
8	4.077	0	1.121	0.457	0.817	0	-0.314	0.701
9	4.234	0	1.155	0.455	0.859	0	-0.269	0.701
10	3.904	0	1.08	0.465	0.815	0	-0.315	0.698

1. **Voxel Number** – This section contains the labeling for all of the Voxels
2. **Frequency Section** – This section will show all bands (as defined by the Which Filters to use Section), and their collected information.
    a. **BAND.AVG** – This is the average of amplitude for the particular band, where “BAND” is the band as defined by the Description section.
    b. **BAND.STD** – This the standard deviation of the amplitude for the particular band, where “BAND” is the band as defined by the Description section.
    c. **BAND.AVGL** - This is the Log of the average of the amplitude for the particular band, where “BAND” is the band as defined by the Description Section.
    d. **BAND.STDL** - This the Log of the standard deviation of the amplitude for the particular band, where “BAND” is the band as defined by the Description section.

ROI Coherence Section

ROI Name	ROI No	LRB	Frontal Lobe			Limbic Lobe		
			1001			1002		
			Left	Right	Both	Left	Right	Both
Frontal Lobe 1	1001	Left		3 -0.06963	-0.06430	-0.07876	-0.08704	-0.08263
Frontal Lobe	1001	Right	2 0.05187		-0.05756	-0.06814	-0.06040	-0.06340
Frontal Lobe	1001	Both	0.05067	0.04934		-0.07127	-0.07058	-0.06979
Limbic Lobe	1002	Left	0.05578	0.05268	0.05285		-0.06511	-0.05713
Limbic Lobe	1002	Right	0.05815	0.05288	0.05362	0.05614		-0.05410
Limbic Lobe	1002	Both	0.05658	0.05240	0.05282	0.05363	0.05408	

PLEASE NOTE: There will be a Tab for each Waveform. In order to see this information, you will have to see them individually.

1. **Defined ROI Section** – Displays the ROI as well as what section of the ROI:
    a. **Left ROI**
    b. **Right ROI**
    c. **Both**
2. **Mean Information** – The Bottom-Half of the readings gives you the Log of the Average amplitude for the particular site combination.
3. **Standard Deviation Information** – The Top-Half of the readings gives you the Log of the standard deviation of amplitude for the particular site combination.

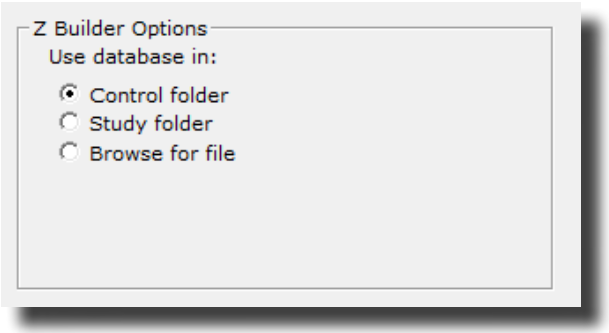
Training to a ZBuilder File

1. First, you will need to make sure that you have your ZBuilder enabled. You will need to do this in the Setup Menu, by first clicking on the Settings Tab, then clicking on the Z-Scores Tab. Here, you will need to make sure that you are utilizing ZBuilder fo rthe ZScore Type, as well as the Z-Score Options, channels, bands, and values that you would like to train. Based off of the location of the ZBuilder File, in the ZBuilder Options, you will choose:

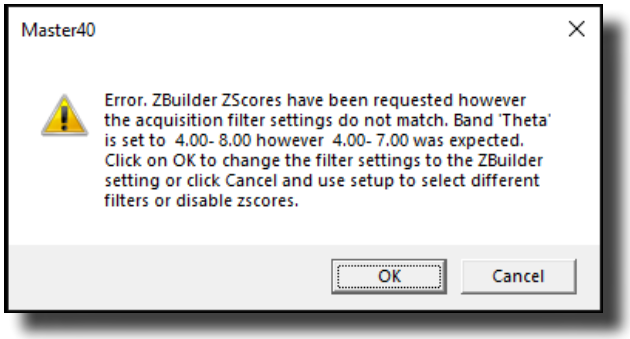
   A. **Control Folder –** Click if you have your ZBuilder File saved in the Control Directory

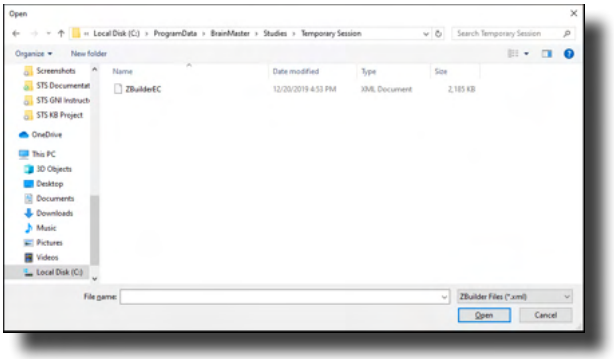
   B. **Study Folder -** Click if you have your ZBuilder File saved in the Study Folder that is being utilized

   C. **Browse for file -** Click if you would like to use Windows Explorer to locate the ZBuilder File on your PC

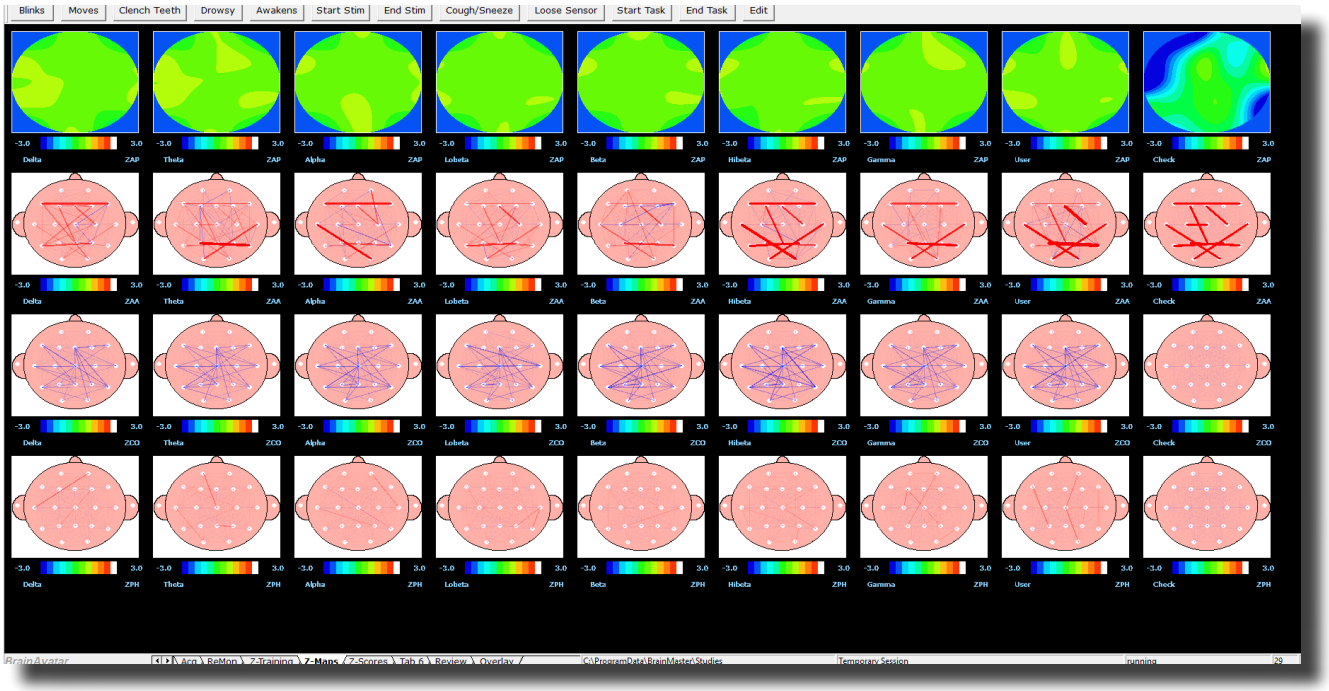


2. Depending on the settings, you might see a message stating that the Bands will need to be adjusted to match the Z-Scores that were recorded. The system will adjust itself automatically to the update the filter settings by clicking OK. Or, you click Cancel to change yourself or cancel using Z-Scores Also, you might have to utilize Windows Explorer in order to find the Database File as well, based off of your ZBuilder Options choice.



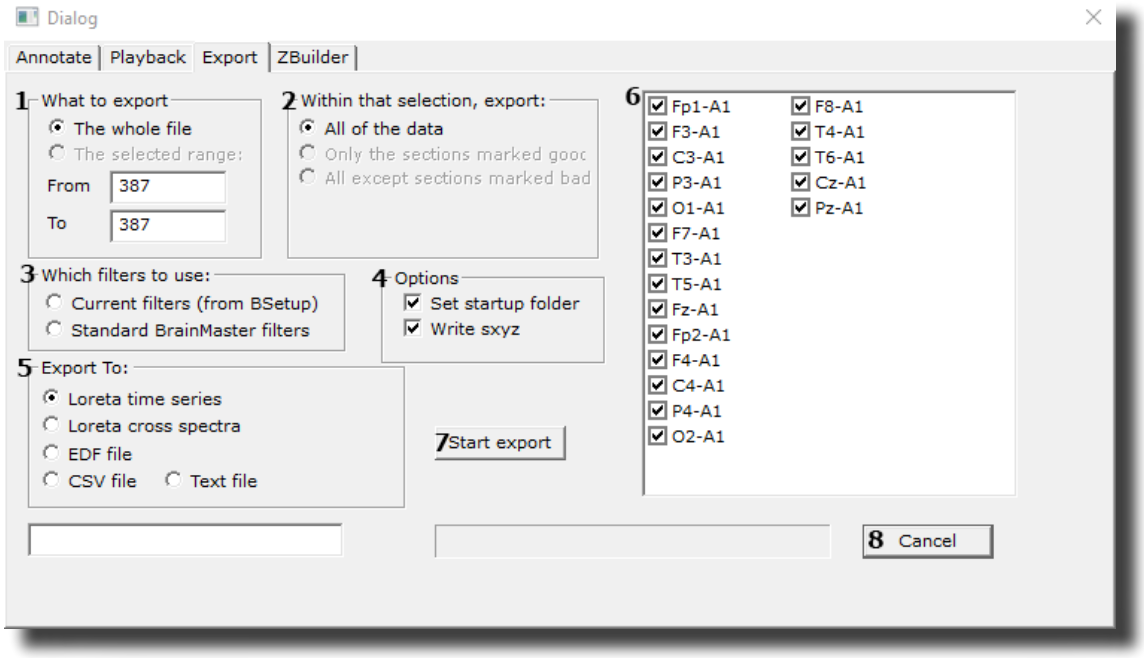


You will now be utilizing the Specified ZBuilder File for Z-Score Training or Assessment. You will be able to tell this by viewing any Z-Score Based Displays should be displaying the Z-Scores that are available.

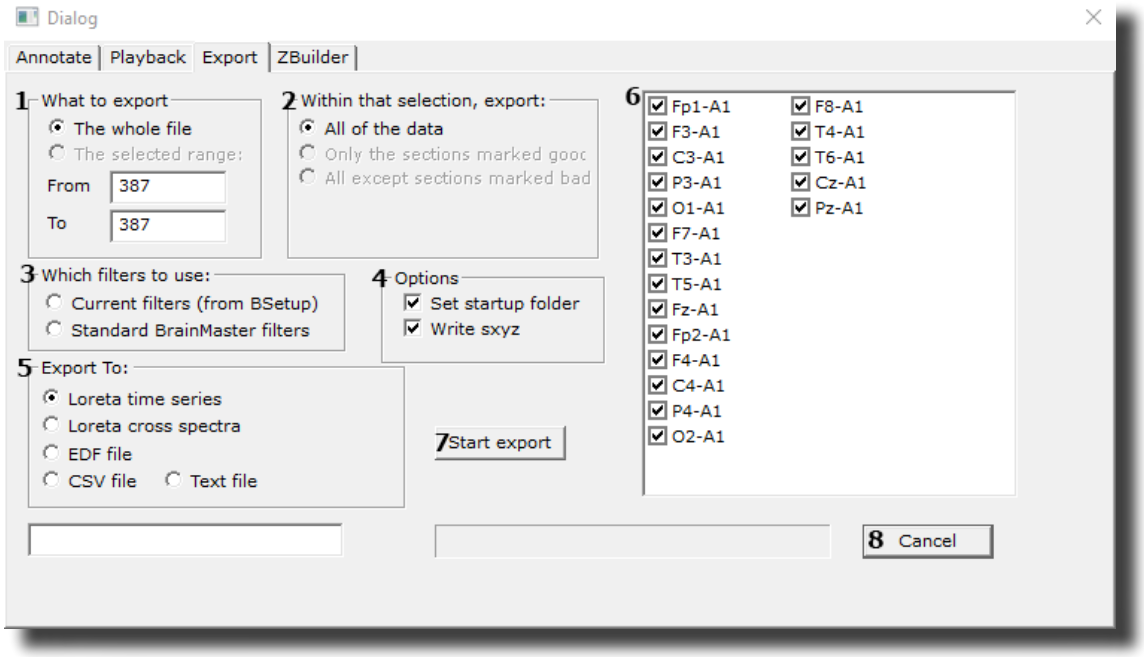


Export

Export Control Menu

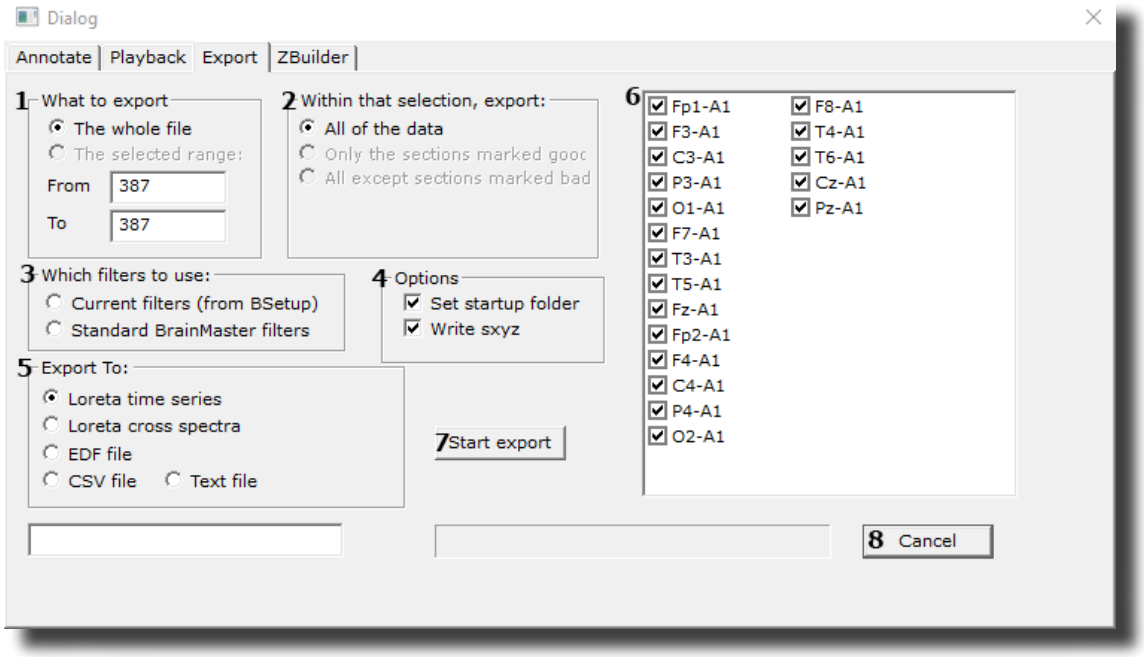


1. **What to export Section –** Section where you can choose what information that you would like to include in the file that is compatible in the sLORETA Software File
    a. **The Whole File –** Choose this to process the entire EDF, BDF, or DAT File
    b. **The Selected Range –** Choose this to process only the selection area chosen through the mouse
2. **Within that selection, export: Section –** Section where you can set a more specific requirement of what you will export
    a. **All of the Data –** Will process all of the Data defined by the What to export Section
    b. **Only the sections marked good –** Will process all of the sections that have been annotated good that are within the What to export Section. This will be grayed out, if there are no sections marked good within the Analyze section
    c. **All except sections marked bad –** Will process all of the sections that have not been annotated as bad that are within the What To export Section. This will be grayed out, if there are no sections marked bad within the export section
3. **Which filters to use: Section –** Section where you can choose what type of filters to use
    a. **Current Filters –** This will utilize the Filters that you have defined from the Bands section



b. **Default Filters –** This will utilize the Standard BrainMaster Filters regardless of the filter settings from the Bands section

4. **Options Section** – Section where you can choose different settings for the Output
   a. **Setup startup folder check box** – Creates the folder located in sLORETA Avatar Imports with the same name as the EDF being reviewed.
   b. **Write sxyz check box** – Creates the sxyz file for use in the sLORETA Software.
5. **Export EEG to Loreta Button –** Click to create the specified file based off of your settings
   a. **Loreta time series Button** – Creates the LORETA Time Series File for use in the sLORETA Software
   b. **Loreta cross spectra Button** – Creates the Cross Spectra file for use in the sLORETA Software.
   c. **EDF File -** Creates a New EDF File that will be located in the Directory currently being used
   d. **CSV File -** Creates a CSV File that will be located in the Directory currently being used
   e. **Text File -** Creates a Text File that will be located in the Directory currently being used

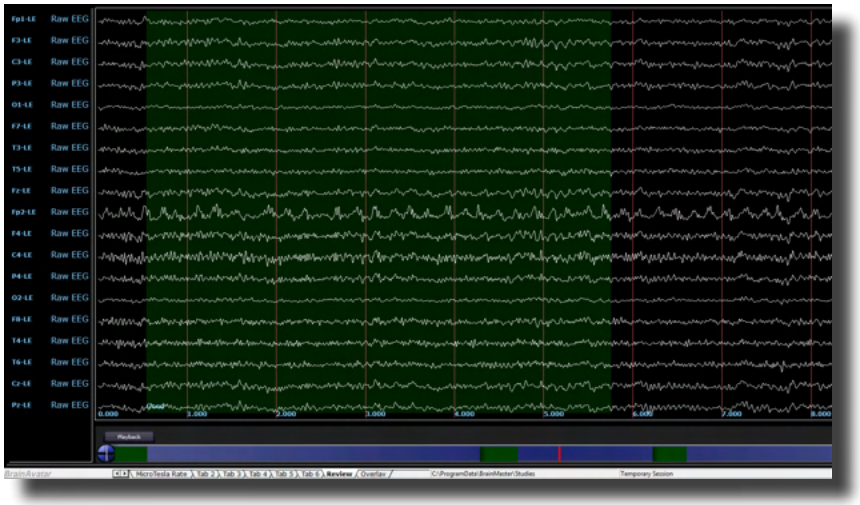


6. **Channel Selection Box –** Section where you can select the channels to be created in the desired output file.
7. **Start Export Button -** Click to create the specified file.
8. **Cancel Button –** Click to cancel creating the specified file.

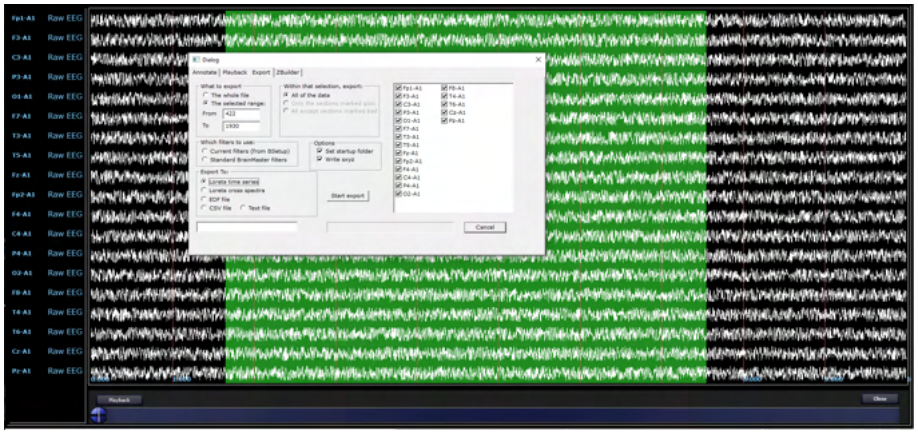
Exporting LORETA Files

***PLEASE NOTE:** In order for full functionality of this step, this requires the software released by the Key Institute. This can be found at **www.unizh.ch/keyinst/NewLORETA/Software/Software.htm**.

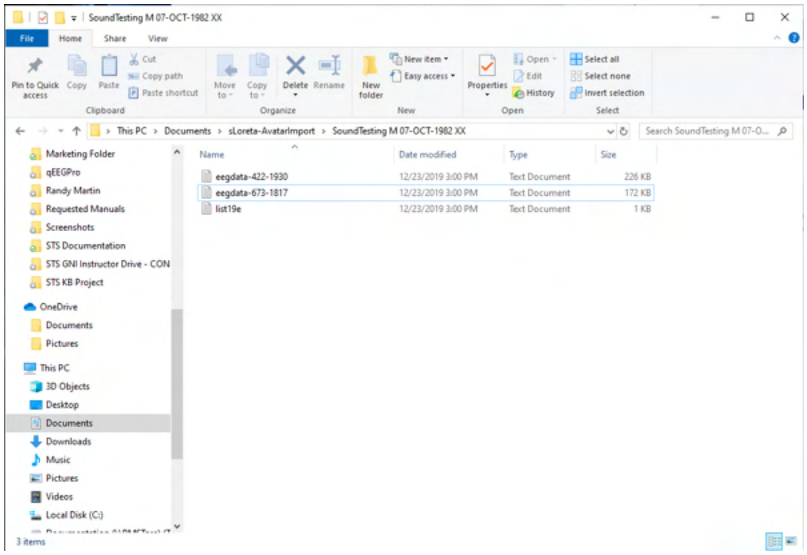
1. Open the File that you would like to work with. Under the Review Tab, you will annotate based off of the instructions from the EDF Annotation Section.



2. When completed, either Double-Click in the EEG, or Hold down the Left-Click on the mouse, and select a section of data. This will bring up the Panel Options Menu. Navigate to the Export Tab, and use this menu to set the Settings as needed. When completed, click the Start Export Button.

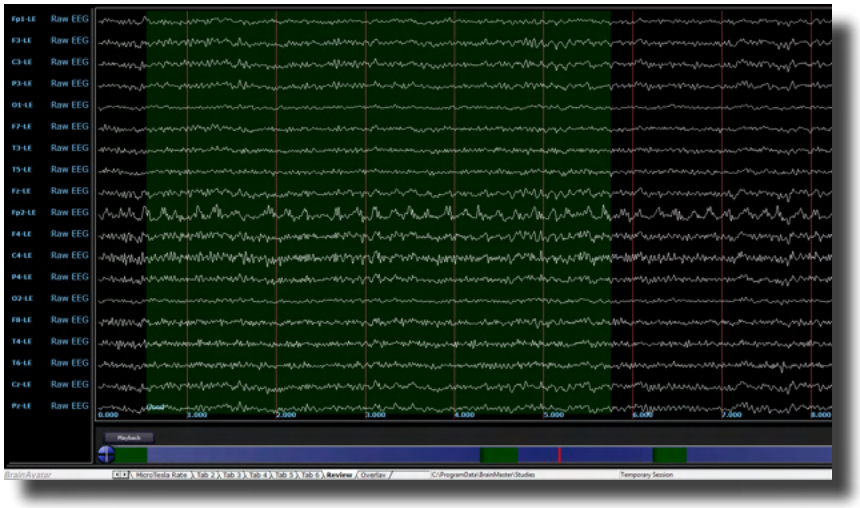


You have now converted this portion of data, into a LORETA export. This will save the information as a text document located in a folder named for your folder in the Documents Directory in the sLoreta-AvatarImport Folder, in a Folder that shares the name of the EDF Opened.

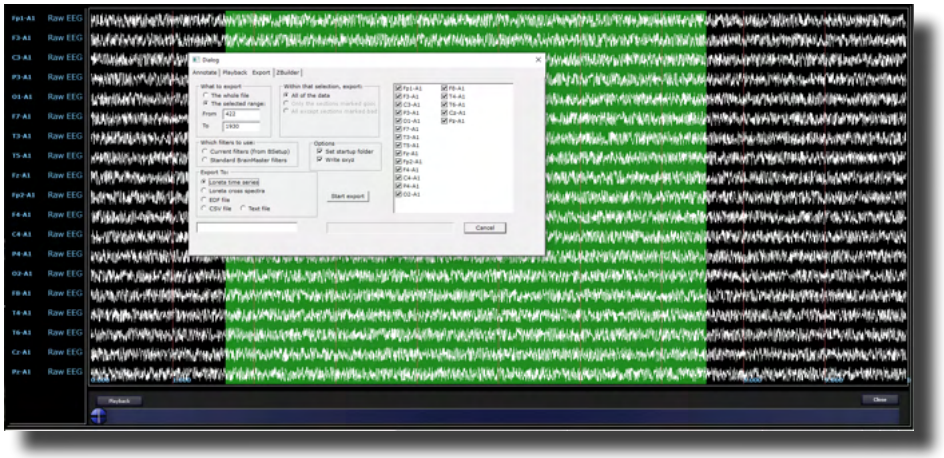


Exporting an EDF/CSF/Text File

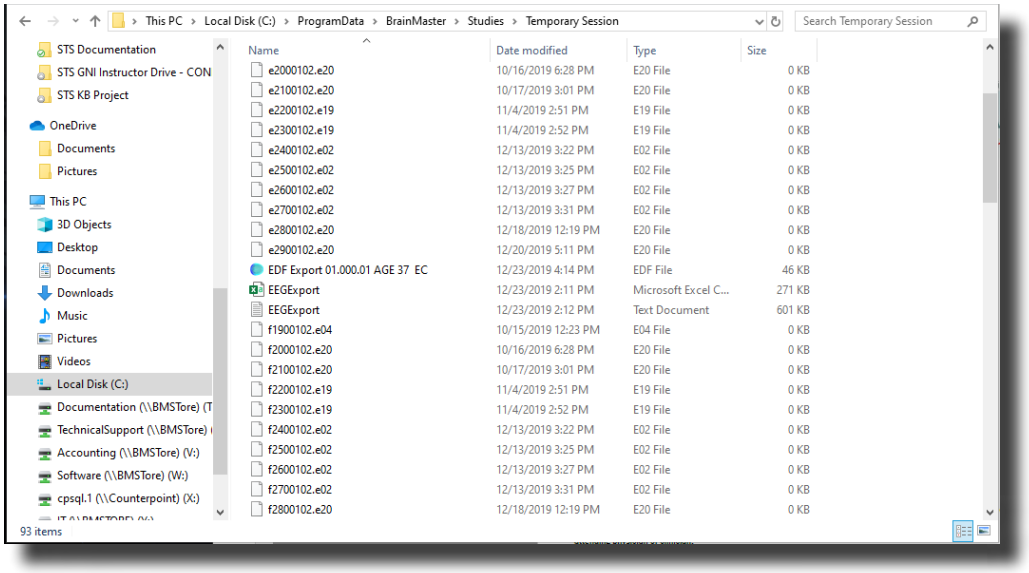
1. Open the File that you would like to work with. Under the Review Tab, you will annotate based off of the instructions from the EDF Annotation Section.



2. When completed, either Double-Click in the EEG, or Hold down the Left-Click on the mouse, and select a section of data. This will bring up the Panel Options Menu. Navigate to the Export Tab, and use this menu to set the Settings as needed. When completed, click the Start Export Button.

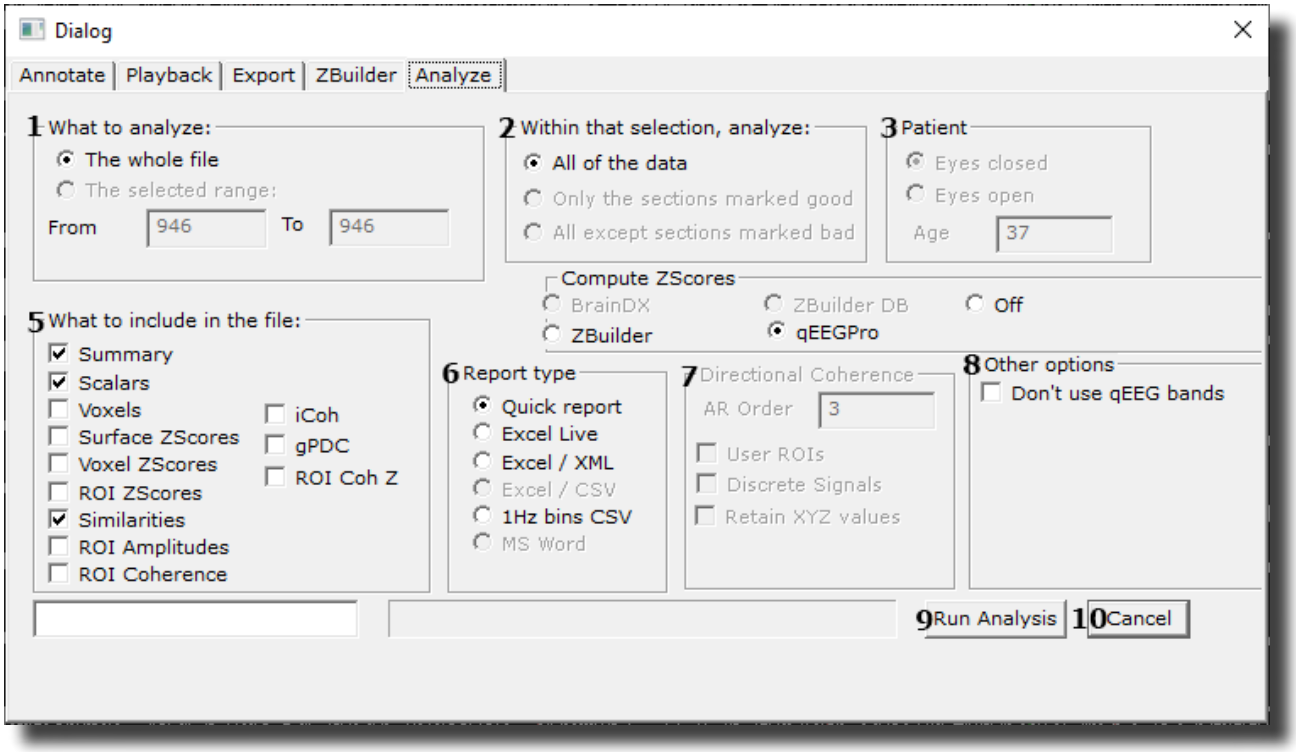


You have now converted this portion of data, into a new EDF,CSV, or Text file. This will save in the Patient folder you reviewed the file in. The file will be named EDF Export with the Age and Recording condition contained within the file.

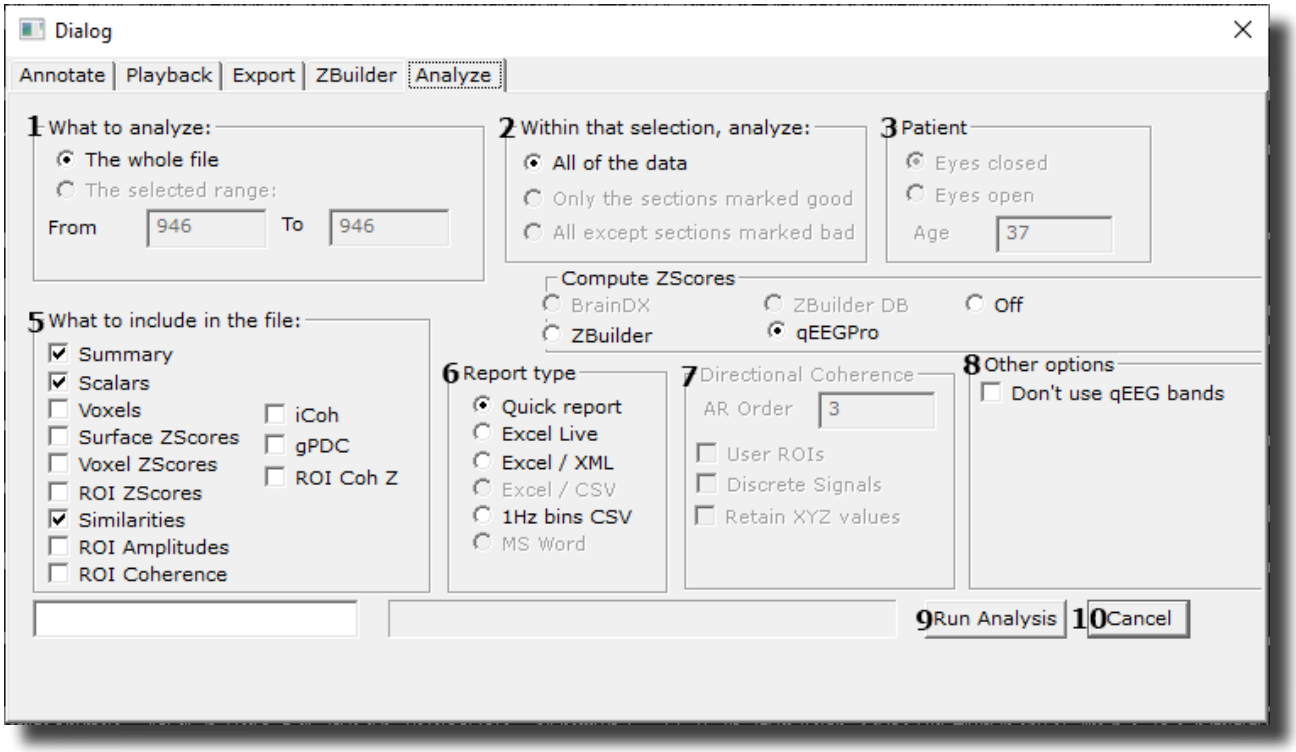


Analyze (Optional Purchase)

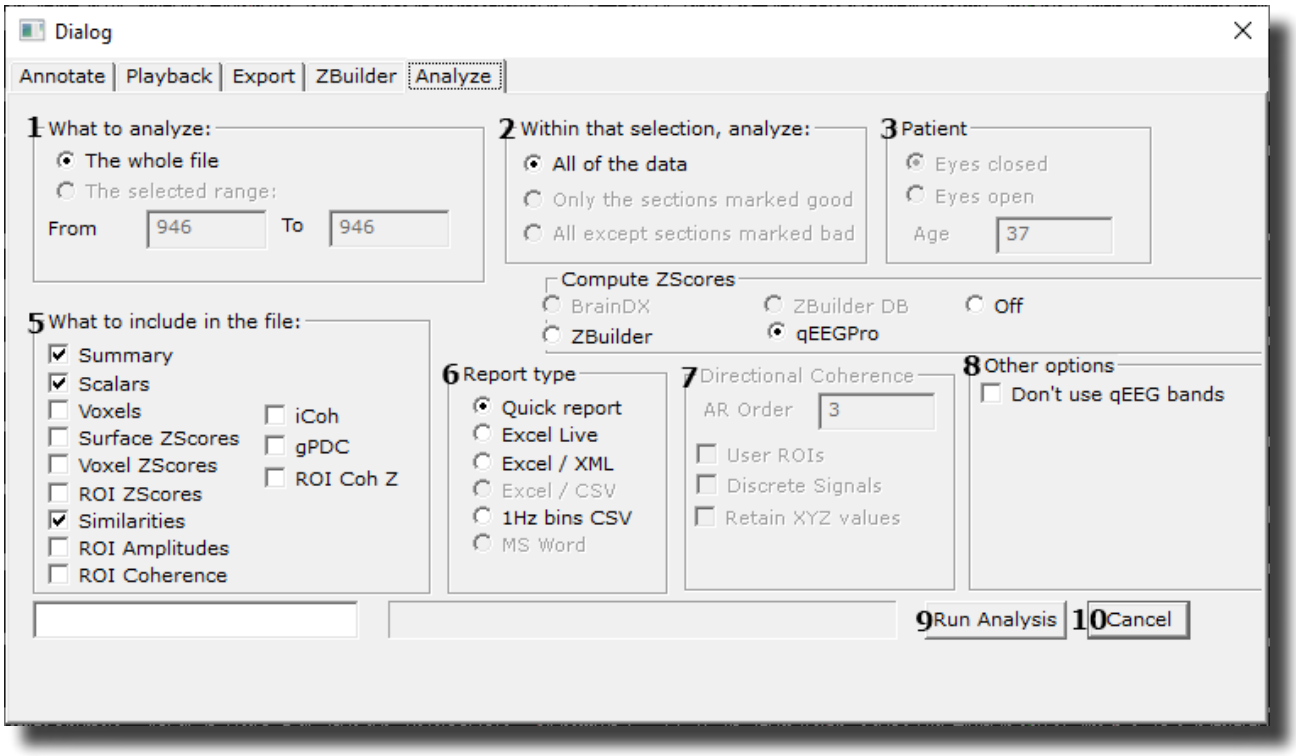
Analyze Control Menu



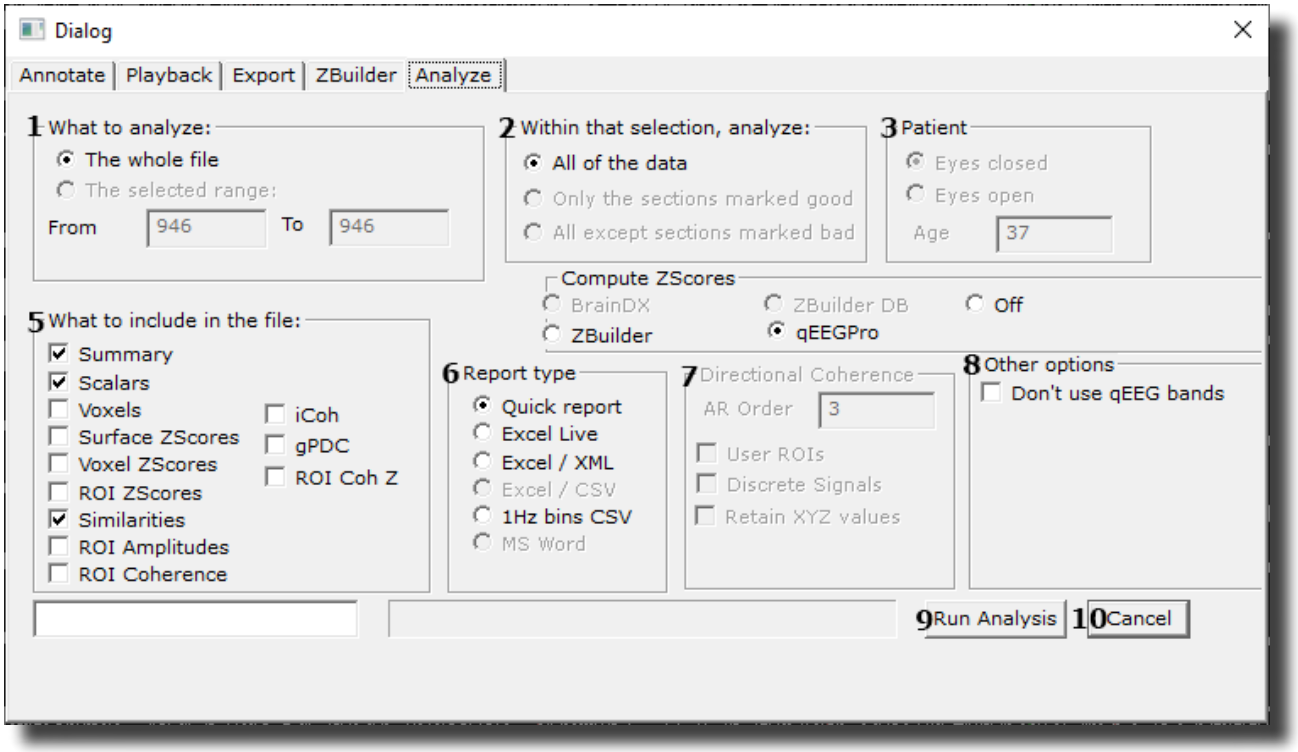
1. **What to analyze Section –** Section where you can choose what information that you would like to analyze.
    a. **The Whole File –** Choose this to process the entire EDF, BDF, or DAT File
    b. **The Selected Range –** Choose this to process only the selection area chosen through the mouse
2. **Within that selection, analyze: Section –** Section where you can set a more specific requirement of what you will analyze
    a. **All of the Data –** Will process all of the Data defined by the What to analyze Section
    b. **Only the sections marked good –** Will process all of the sections that have been annotated good that are within the What to analyze Section. This will be grayed out, if there are no sections marked good within the analyze section
    c. **All except sections marked bad –** Will process all of the sections that have not been annotated as bad that are within the What to analyze Section. This will be grayed out, if there are no sections marked bad within the analyze section
3. **Patient Section –** This section will detect the Age and recording condition of the EEG file, and fill this out automatically. Though, if you would like to adjust this, this is where that can be done
4. **Compute Z-Scores Section -** Section where you set what Z-Score DLL (if any) you will use. ***PLEASE NOTE:** This is necessary for Z-Score Metrics to be possible.



5. **What to include in the file: Section –** Section where you can set what information is included in the file
   a. **Summary –** Click this to create a page with Summary information
   b. **Scalars –** Click this to create a page with Scalar information
   c. **Voxels –** Click this to create a page with raw Voxel information
   d. **Surface Z-Scores –** Click this to create two pages with Surface Z-Score Information
   e. **Voxel ZScores –** Click this to create a page with Voxel Z-Score information
   f. **ROI Z-Scores –** Click this to create a page with ROI Z-Score information
   g. **Similarities –** Click this to create a page for every band of similarities information
   h. **ROI Amplitudes –** Click this to create a page of ROI Amplitudes information
   i. **ROI Coherence -** Click this to create a page for every band of ROI Cohehence information
   j. **iCoh -** Click this to create a page of isolated effective coherence (iCoh) information.
   k. **gPDC -** Click this to create a page of generalized partial directed coherence (gPDC) information.
   l. **ROI Coh Z -** Click this to create a page for every band of ROI Coherence Z-Score Information.



6. **Report type Section –** Section where you can set the type of report that you would like to be created
   a. **Quick report –** Click to utilize the built-in report viewer for the report.
   b. **Excel Live –** Click to create to open the report in Excel after production. This will allow you to name, and save the report where you would like
   c. **Excel / XML –** Click to create an XML report named Analyis with recording condition date and time stamped for the time of the recording in the Study currently being used.
   d. **Excel / CSV –** Click to create a .CSV report named "Report.csv" in the current Study directory currently being used (Coming Soon).
   e. **1 hz bins CSV -** Click to create a .CSV report named Analyis with recording condition date and time stamped for the time of the recording in the Study currently being used. *****PLEASE NOTE:** This report is only available for Voxels and Voxel Z-Scores (qEEGPro Z-Scores only).
   f. **MS Word -** Click to create a Word Report from the data (Coming soon).
7. **Directional Coherence -** Section where you can set the settings for Directional Cohence Processing
   a. **AR Order –** Set the AR () Order here. The Default Order is 3
   b. **User ROIs –** Select to add User created ROIs to the report.
   c. **Discrete Signals –** Select to add Discrete (Surface EEG Channels) Signals to the Report
   d. **Retain XYZ values –** Select to add the X, Y, and Z Coordinate Values to the Report



8. **Other Options Section –**
   a. **Don't Use "Database" bands –** Check to choose not to use the default defined bands from a Z-Score Database. ***Please Note:** Doing this can cause some Z-Score Values to be reported as 0.0
9. **Run Analysis Button –** Click to create the analysis file based off of all of your selections
10. **Cancel Button -** Click to cancel creating an analysis file and close the Review Panel

Sample Analyze File & Layout

Description Section

ZBuilder rev	1	4.7.5.844										
Date Created	2	2020/07/25 10:19:16										
From file	3	C:\Users\rmilicia\Desktop\BMD_BA_7-22-2020 01.000.02 AGE 29 EC.edf										
Sample1	4	1										
Sample2	5	2546										
# Samples	6	2545										
Age	7	29.00000										
Reserved3	8											
Reserved4	9											
Reserved5	10											
Reserved6	11											
Reserved7	12											
Reserved8	13											
Filters	14	EEG	Delta	Theta	Alpha	Lobeta	Beta	Hibeta	Gamma	Alpha1	Alpha2	Alpha2
Filt Active	15	1	1	1	1	1	1	1	1	1	1	1
Flow	16	0	1	4	8	12	15	20	35	8	10	10.2
Fhigh	17	0	3	8	12	15	20	30	45	10	12	12.7
Order	18	3	3	3	3	3	3	3	3	3	3	3

1. **ZBuilder Revision –** Informs you of which version of the BrainAvatar Software was used to create the ZBuilder File.
2. **Date Created -** Lists the Date Created of the ZBuilder File
3. **From File -** Informs you of What EEG File was used to create the ZBuilder File
4. **Sample1 -** Informs you the Starting Sample Number of the last scanned section of the EDF
5. **Sample2 -** Informs you the Ending Sample Number of the last scanned section of the EDF
6. **# Samples -** Informs you the total number of samples of the last scanned Section of the EDF
7. **Age -** Informs you the Age that was utilized for the ZBuilder File
8. **Reserved3 -** Reserved for future use
9. **Reserved4 -** Reserved for future use
10. **Reserved5 -** Reserved for future use
11. **Reserved6 -** Reserved for future use
12. **Reserved7 -** Reserved for future use
13. **Reserved8 -** Reserved for future use
14. **Filters -** Lists the Names of the filtered bands that were included in the ZBuilder File
15. **Filt Active -** Lists whether a Filtered wave form is active or not. 1 means that it is Active and 0 means that it is not active
16. **Flow -** Defines the Low Frequency for the Filtered Waveform
17. **FHigh -** Defines the High Frequency for the Filtered Waveform
18. **Order -** Defines What Filter Order was used for the Filtered Waveform

Scalars Section

Channel 1	Value 2	EEG 3	Delta	Theta	Alpha
	FLOW	0	1	4	8
	FHIGH	0	3	8	12
Fp1	MEAN.01	5.91289	1.92221	1.71769	3.94187
	AVGRMS.01	7.26565	2.23879	1.95459	4.43798
	AVGPKPK.01	20.55036	6.33225	5.52843	12.55250
	OMEAN.01	56.30117	20.56001	18.56214	35.60821
	MIN.01	-22.75174	-22.75174	-22.75174	-22.75174
	MAX.01	24.25185	24.25185	24.25185	24.25185
	MEANF.01	0.00000	6.39974	10.75774	18.29484
	STDF.01	0.00000	0.82377	0.98267	2.85955
	MEANMF.01	0.00000	1.65336	6.49101	9.44044
	STDMF.01	0.00000	0.09469	0.19423	0.11697

1. **Channel Section –** This section will display the labeling for all of the Channels that have been collected from using the analyze system.
2. **Value Section –** This section will display the label for the information that has been collected in the Frequency Band Section
    a. **FLOW –** Also known as Frequency Low. This is the lowest range of the frequency band
    b. **FHIGH –** Also known as Frequency High. This is the highest range of the frequency band.
    c. **MEAN.X –** This is the average of Amplitude for the particular band, where "X" is that particular Channel number.
    d. **AVGRMS.X –** This is the average RMS value for the particular band, where "X" is that particular Channel number.
    e. **AVGPKPK.X –** This is the average Peak-To-Peak value for the particular band, where "X" is that particular Channel number.
    f. **MIN.X –** This is the minimum value seen for the particular band, where "X" is that particular Channel number.
    g. **MAX.X –** This is the maximum value seen for the particular band, where "X" is that particular Channel number.
    h. **MEANF.X –** This is the percent of power for the particular band over the entire frequency range, where "X" is that particular Channel number.
    i. **STDF.X –** This is the Standard Deviation of the percent of energy for that particular band, where "X" is that particular Channel number.
    j. **MEANMF.X –** This is the Modal Frequency for the particular band, where "X" is that particular Channel number.

Channel 1	Value 2	EEG 3	Delta	Theta	Alpha
	FLOW	0	1	4	8
	FHIGH	0	3	8	12
Fp1	MEAN.01	5.91289	1.92221	1.71769	3.94187
	AVGRMS.01	7.26565	2.23879	1.95459	4.43798
	AVGPKPK.01	20.55036	6.33225	5.52843	12.55250
	OMEAN.01	56.30117	20.56001	18.56214	35.60821
	MIN.01	-22.75174	-22.75174	-22.75174	-22.75174
	MAX.01	24.25185	24.25185	24.25185	24.25185
	MEANF.01	0.00000	6.39974	10.75774	18.29484
	STDF.01	0.00000	0.82377	0.98267	2.85955
	MEANMF.01	0.00000	1.65336	6.49101	9.44044
	STDMF.01	0.00000	0.09469	0.19423	0.11697

   k. **STDMF**.X – This is the Standard Deviation of the Modal Frequency for that particular band, where “X” is that particular Channel number.

3. **Frequency Section** – This section will show all bands (as defined by Z-Score DLL or The Settings File itself), and their collected information.

Similarities Section

Phase Similarity 1	Fp1 2	Fp2	F3	F4	C3	C4	P3	P4	O1	O2
Fp1		4 0.69701	0.68221	0.52701	0.46714	0.51099	0.41732	0.36653	0.30166	0.22254
Fp2	3 0.17403		0.66914	0.62279	0.46540	0.53762	0.39628	0.30834	0.26941	0.21568
F3	0.23965	0.22230		0.75064	0.66065	0.67401	0.55755	0.42912	0.40558	0.30351
F4	0.27661	0.24452	0.17955		0.59055	0.74429	0.50987	0.46888	0.38174	0.31727
C3	0.29210	0.25599	0.25785	0.25952		0.64606	0.77451	0.59966	0.56053	0.43156
C4	0.28466	0.28709	0.22396	0.18942	0.23175		0.54715	0.53575	0.48631	0.39213
P3	0.30819	0.29563	0.26684	0.25635	0.21227	0.25608		0.68673	0.70226	0.54035
P4	0.29426	0.27161	0.29787	0.28593	0.26774	0.26570	0.25787		0.72117	0.72159
O1	0.23363	0.22370	0.25522	0.23340	0.23761	0.23723	0.20665	0.14995		0.66117
O2	0.22802	0.19079	0.25527	0.25186	0.27578	0.27497	0.30496	0.24496	0.25246	
F7	0.22614	0.24815	0.19403	0.22988	0.25288	0.23342	0.26643	0.24976	0.24862	0.26025
F8	0.29568	0.27177	0.28168	0.24736	0.27863	0.28751	0.26534	0.25552	0.16907	0.24254
T3	0.25441	0.26672	0.28554	0.29167	0.20353	0.26631	0.22762	0.23206	0.22769	0.24585

PLEASE NOTE: There will be a Tab for each Waveform. In order to see this information, you will have to see them individually.

1. **Similarity Type –** Displays the type of Similarty being viewed. There are six (6) different types looked at.
    a. **Phase Similarity**
    b. **Training Coherence**
    c. **Correlation**
    d. **Phase Classic**
    e. **Pure Coherence**
    f. **Comodulation**
2. **Site Locations –** Shows the different locations that were used in the ZBuilder.
3. **Mean Information –** The Bottom-Half of the readings gives you the Average amplitude for the particular site combination.
4. **Standard Deviation Information –** The Top-Half of the readings gives you the standard deviation of amplitude for the particular site combination.

Band Ratios Section

Channel 1	Value 2	Delta/Theta	Delta/Alpha 3	Delta/Lobeta	Delta/Beta	Delta/Hibeta	Theta/Alpha	Theta/Lobeta
Fp1	MEANL.01	0.00310	-0.33479	0.22737	0.07017	-0.10543	-0.33788	0.22427
	STDL.01	0.42109	0.44871	0.46993	0.45560	0.45447	0.35810	0.36845
Fp2	MEANL.02	-0.05901	-0.36309	0.21258	0.05403	-0.09089	-0.30408	0.27159
	STDL.02	0.36930	0.33292	0.45520	0.41498	0.33070	0.30328	0.34114
F3	MEANL.03	0.04594	-0.29848	0.28180	0.14491	-0.00485	-0.34442	0.23586
	STDL.03	0.41871	0.44559	0.39080	0.35306	0.42211	0.32037	0.37315
F4	MEANL.04	-0.02261	-0.34565	0.22527	0.05335	-0.10651	-0.32304	0.24787
	STDL.04	0.39612	0.46599	0.44112	0.43665	0.40493	0.42468	0.41556
C3	MEANL.05	0.00541	-0.34776	0.19302	0.10303	0.01222	-0.35317	0.18761
	STDL.05	0.49333	0.76602	0.46560	0.49727	0.39785	0.40005	0.51944
C4	MEANL.06	0.02905	-0.28325	0.18772	0.09938	-0.01465	-0.31230	0.15867
	STDL.06	0.41731	0.33064	0.45816	0.44018	0.43819	0.36038	0.34736
P3	MEANL.07	-0.04872	-0.49270	0.20796	0.07144	0.01372	-0.44398	0.25668
	STDL.07	0.36449	0.00000	0.37761	0.37776	0.43256	0.00000	0.30145

1. **Channel Section** – This section will display the labeling for all of the Channels that have been collected from using the ZBuilder system.
2. **Value Section** – This section will display the label for the information that has been collected in the Frequency Band Section
    a. **MEANL.X** – This is the Log of the average of Amplitude for the band ratio, where "X" is that particular Channel number.
    b. **STDL.X** – This is the Log of the Standard deviation of the Amplitude for the band ratio, where "X" is that particular Channel number.
3. R**atio Section** – This section will show all band ratios (as defined by the Which Filters to use Section), and their collected information

Voxels Section

Voxel Number 1	EEG.AVG 2	Delta.AVG	Theta.AVG	Alpha.AVG	Lobeta.AV	Beta.AVG	Hibeta.AV	Gamma.AV
1	2.339	0.955	0.715	1.38	0.538	0.747	1.107	0.761
2	2.33	0.978	0.7	1.251	0.533	0.734	1.125	0.775
3	2.316	0.994	0.692	1.156	0.529	0.723	1.132	0.778
4	2.23	0.932	0.727	1.424	0.529	0.741	1.08	0.736
5	2.223	0.953	0.71	1.299	0.525	0.726	1.098	0.749
6	2.225	0.973	0.699	1.194	0.521	0.716	1.11	0.758
7	2.118	0.912	0.742	1.468	0.522	0.739	1.058	0.714
8	2.117	0.933	0.723	1.348	0.519	0.724	1.076	0.728
9	2.127	0.968	0.702	1.168	0.51	0.702	1.094	0.737
10	2.03	0.921	0.74	1.402	0.513	0.727	1.064	0.715
11	2.046	0.941	0.723	1.293	0.51	0.714	1.078	0.725
12	2.039	0.936	0.758	1.407	0.484	0.803	1.258	0.867
13	2.076	0.95	0.743	1.306	0.492	0.795	1.283	0.895
14	2.114	0.968	0.738	1.246	0.504	0.792	1.305	0.922

1. **Voxel Number** – This section containsl the labeling for all of the Voxels
2. **Frequency Section** – This section will show all bands (as defined by the Which Filters to use Section), and their collected information.
    a. **BAND.AVG** – This is the average of amplitude for the particular band, where “BAND” is the band as defined by the Which Filters to use section.

ROI Amplitudes Section

ROI Name 1	Delta.L 2	Theta.L	Alpha.L	Lobeta.L	Beta.L	Hibeta.L	Gamma.L
Frontal Lobe	1.1	0.853	1.112	0.535	0.806	1.248	0.678
Limbic Lobe	1.14	1.409	3.484	0.768	1.22	1.425	0.642
Occipital Lobe	0.807	1.191	3.121	0.695	1.15	0.88	0.464
Parietal Lobe	0.876	1.088	2.78	0.669	1.036	1.115	0.443
Sub Lobar	0.809	0.838	1.902	0.593	0.833	1.074	0.588
Temporal Lobe	0.814	0.787	1.749	0.586	0.828	0.979	0.6
All	0.633	1.033	2.778	0.585	0.955	0.748	0.401
Angular Gyrus	0.707	0.864	2.048	0.586	0.864	0.876	0.492
Anterior Cingulate	0.813	0.688	0.912	0.376	0.614	0.955	0.577
Cingulate Gyrus	0.813	0.992	2.195	0.553	0.838	1.217	0.398
Cuneus	0.782	1.157	3.02	0.658	1.116	0.859	0.444
Extra Nuclear	1.025	0.707	1.275	0.56	0.71	1.16	0.735
Fusiform Gyrus	0.744	0.678	1.314	0.455	0.695	0.913	0.585
Inferior Frontal Gyrus	1.011	0.599	0.852	0.422	0.597	0.873	0.6

1. **ROI Name –** This section contains the labeling for all of the ROIs
2. **Frequency Section –** This section will show all bands, and their Average Amperage broken down in the following order
    a. **BAND.L –** Average Amperage for the Left portion of the ROI
    b. **BAND.R –** Average Amperage for the Right portion of the ROI
    c. **BAND.LR –** Average Amperage for the entire ROI

ROI Coherence Section

ROI Name 1	ROI No 2	LRB 3	Frontal Lobe			Limbic Lobe		
			1001			1002		
			Left	Right	Both	Left	Right	Both
Frontal Lobe	1001	Left		4 0.80400	0.85122	0.84180	0.82552	0.83513
Frontal Lobe	1001	Right	5 0.15951		0.84197	0.84538	0.85875	0.84968
Frontal Lobe	1001	Both	0.16323	0.15603		0.85974	0.84929	0.85595
Limbic Lobe	1002	Left	0.16005	0.15560	0.15542		0.90320	0.91231
Limbic Lobe	1002	Right	0.15664	0.15433	0.15175	0.15817		0.91489
Limbic Lobe	1002	Both	0.15635	0.15283	0.15142	0.15985	0.15523	
Occipital Lobe	1003	Left	0.15623	0.15864	0.15529	0.15675	0.15274	0.15330
Occipital Lobe	1003	Right	0.15920	0.15605	0.15580	0.16006	0.15767	0.15702
Occipital Lobe	1003	Both	0.16143	0.15757	0.15719	0.15995	0.15519	0.15561
Parietal Lobe	1004	Left	0.16135	0.16044	0.15869	0.16297	0.15826	0.15905
Parietal Lobe	1004	Right	0.15925	0.15099	0.15226	0.15448	0.15076	0.15093
Parietal Lobe	1004	Both	0.15757	0.15329	0.15311	0.15716	0.15261	0.15357

PLEASE NOTE: There will be a Tab for each Waveform. In order to see this information, you will have to see them individually.

1. **ROI Name -** This section contains the labeling for all of the ROIs
2. **ROI Number –** This section shows the BrainMasters assigned Internal ROI Number.
3. **LRB –** This section Identifies the ROI's Location, left, right, or both.
4. **Mean Information –** The Bottom-Half of the readings gives you the Average Coherence for the particular ROI combination.
5. **Standard Deviation Information –** The Top-Half of the readings gives you the standard deviation of amplitude for the particular ROI combination.

ROI Coherence Z-Score Section

ROI Name 1	ROI No 2	LRB 3	Frontal Lobe			Limbic Lobe		
			1001			1002		
			Left	Right	Both	Left	Right	Both
Frontal Lobe	1001	Left		4 -4.54673	-2.03956	-4.11732	-2.97417	-4.63581
Frontal Lobe	1001	Right			-3.78154	-5.03310	-2.92552	-4.87134
Frontal Lobe	1001	Both				-4.35416	-7.13846	-6.85512
Limbic Lobe	1002	Left					0.59526	-2.49510
Limbic Lobe	1002	Right						-3.51408
Limbic Lobe	1002	Both						
Occipital Lobe	1003	Left						
Occipital Lobe	1003	Right						
Occipital Lobe	1003	Both						
Parietal Lobe	1004	Left						
Parietal Lobe	1004	Right						
Parietal Lobe	1004	Both						

PLEASE NOTE: There will be a Tab for each Waveform. In order to see this information, you will have to see them individually.

1. **ROI Name -** This section contains the labeling for all of the ROIs
2. **ROI Number –** This section shows the BrainMasters assigned Internal ROI Number.
3. **LRB –** This section Identifies the ROI's Location, left, right, or both.
4. **Standard Deviation Information –** The Top-Half of the readings gives you the standard deviation for the particular ROI combination.

Surface Z-Score Power Section

Band 1	EEG.ZAP 2	Delta.ZAP	Theta.ZAP	Alpha.ZAP	Lobeta.ZAP	Beta.ZAP	Hibeta.ZAP
Fp1	0.00172	-2.59377	-2.18979	0.43388	-1.08148	0.34665	1.23122
Fp2	0.00167	-3.01741	-2.01591	0.38389	-1.27885	0.11764	0.89427
F3	0.00176	-2.35727	-1.87109	0.37690	-0.89876	0.06735	1.12638
F4	0.00174	-3.42166	-1.74780	0.18891	-1.10392	0.03836	1.37109
C3	0.00176	-2.06772	-1.22397	0.31630	-0.53204	-0.06372	0.35709
C4	0.00169	-2.03678	-1.66715	-0.20948	-0.94716	-0.32914	0.24982
P3	0.00198	-1.52801	-0.54742	0.50641	-1.09338	-0.20039	0.00040
P4	0.00199	-1.88408	-0.56238	0.53060	-0.97494	0.54025	-0.14230
O1	0.00226	-1.42572	0.50617	0.83592	-0.68042	0.68096	-0.48564
O2	0.00238	-1.42217	0.92350	1.06979	-0.21992	1.59710	-0.04003
F7	0.00170	-1.65587	-2.40473	0.44257	-0.87997	0.12348	1.27444
F8	0.00160	-2.67483	-1.64348	0.16313	-0.65146	0.52189	1.58234
T3	0.00144	-1.86646	-1.64962	-0.01829	-1.68206	-0.66015	-0.08749
T4	0.00146	-3.19708	-1.88442	-0.48486	-0.98276	0.08948	1.02236

1. **Channel Section –** This section will display the labeling for all of the Channels that have been collected from using the analyze system.
2. **Frequency Section –** This section will show the Standard Deviation values for each band. The following Metrics will be on this page
    a. **Absolute Power**
    b. **Relative Power**

Surface Z-Score Connectivities Section

Delta	1	Fp1.ZAA	Fp2.ZAA	F3.ZAA	F4.ZAA	C3.ZAA	C4.ZAA	P3.ZAA
Fp1			2 0.72349	-2.04744	-1.53225	-1.88364	-2.08160	-2.09935
Fp2				-2.31870	-1.84506	-2.08944	-2.25965	-2.29824
F3					1.41772	-0.77407	-1.17071	-1.26669
F4						-1.61168	-2.06608	-1.94137
C3							-0.94545	-1.43280
C4								-0.39955
P3								
P4								
O1								
O2								
F7								
F8								
T3								
T4								
T5								

1. **Band Section –** This section will display all of the different Standard Deviation for that particular band and Metric.
2. **Channel Section –** This section will show all of the channels that are involved in the cross communication metrics of that particular band. The following Metrics will be on this page
    a. **Asymmetry**
    b. **Coherence**
    c. **Phase**

Voxels Z-Scores

Voxel Number 1	EEG.ZAP	Delta.ZAP 2	Theta.ZAP	Alpha.ZAP	Lobeta.ZAI	Beta.ZAP	Hibeta.ZAI
1	0	-1.644	-1.246	0.091	0.079	0.35	0.372
2	0	-1.742	-1.4	0.004	0.092	0.321	0.355
3	0	-1.809	-1.502	-0.069	0.113	0.301	0.33
4	0	-1.704	-1.196	0.105	0.077	0.421	0.441
5	0	-1.787	-1.355	0.032	0.098	0.386	0.428
6	0	-1.852	-1.475	-0.049	0.117	0.359	0.401
7	0	-1.791	-1.153	0.115	0.072	0.512	0.535
8	0	-1.865	-1.314	0.051	0.098	0.469	0.518
9	0	-1.959	-1.53	-0.079	0.134	0.403	0.458
10	0	-1.93	-1.271	0.073	0.099	0.573	0.623
11	0	-1.969	-1.406	0.001	0.119	0.525	0.587
12	0	-1.83	-1.176	0.009	-0.094	0.958	1.166
13	0	-1.894	-1.302	-0.039	0.011	0.93	1.121
14	0	-1.956	-1.389	-0.065	0.121	0.902	1.071

1. **Voxel Number –** This section contains the labeling for all of the Voxels
2. **Frequency Section –** This section will show all bands, and their Standard Deviation for that particular voxel

ROI Z-Scores Section

ROI Name 1	Delta.L 2	Theta.L	Alpha.L	Lobeta.L	Beta.L	Hibeta.L	Gamma.L
Frontal Lobe	-1.27	-1.104	-0.113	0.314	0.573	0.566	0.517
Limbic Lobe	-1.222	-0.674	0.068	-0.008	0.694	0.635	0.682
Occipital Lobe	-0.207	0.091	0.055	-0.237	0.576	0.133	0.425
Parietal Lobe	-0.469	-0.239	0.075	-0.11	0.527	0.597	0.993
Sub Lobar	-1.27	-0.845	0.146	0.2	0.519	0.51	0.269
Temporal Lobe	-0.935	-0.574	0.157	0.044	0.399	0.336	0.215
All	-0.312	0.071	0.109	-0.103	0.405	0.113	0.245
Angular Gyrus	-0.278	-0.096	-0.059	-0.166	0.435	0.363	0.594
Anterior Cingulate	-2.131	-1.581	-0.229	0.1	0.631	0.631	0.387
Cingulate Gyrus	-0.833	-0.654	-0.004	0.125	0.622	0.821	1.111
Cuneus	-0.19	0.067	0.005	-0.327	0.582	0.092	0.508
Extra Nuclear	-1.617	-1.411	-0.092	0.169	0.263	0.345	0.093
Fusiform Gyrus	-0.686	-0.179	0.217	-0.076	0.534	0.307	0.297
Inferior Frontal Gyrus	-1.712	-1.513	-0.158	0.272	0.391	0.414	0.117

1. **ROI Section –** This section contains the labeling for all of the ROIs
2. **Frequency Section –** This section will show all bands, and their Standard Deviations broken down in the following order
    a. **BAND.L –** Standard Deviation for the Left portion of the ROI
    b. **BAND.R –** Standard Deviation for the Right portion of the ROI
    c. **BAND.LR –** Average Standard Deviation for the entire ROI

iCoh Section

Channels 1	1	2	3	4	5	6	7
Fp1-Fp2	2 0.59090	0.59253	0.59526	0.59908	0.60398	0.60996	0.61700
Fp1-F3	1.62061	1.61001	1.59294	1.57022	1.54284	1.51191	1.47854
Fp1-F4	0.93744	0.93770	0.93814	0.93875	0.93953	0.94048	0.94158
Fp1-C3	0.02278	0.02361	0.02500	0.02697	0.02957	0.03283	0.03681
Fp1-C4	0.45258	0.45448	0.45765	0.46210	0.46783	0.47486	0.48319
Fp1-P3	0.03706	0.03962	0.04392	0.04999	0.05788	0.06769	0.07947
Fp1-P4	0.34172	0.34548	0.35172	0.36043	0.37155	0.38503	0.40080
Fp1-O1	3.07952	3.03135	2.95507	2.85591	2.74001	2.61351	2.48202
Fp1-O2	1.12887	1.12817	1.12701	1.12540	1.12336	1.12090	1.11804
Fp1-F7	0.15457	0.15688	0.16074	0.16619	0.17328	0.18205	0.19257
Fp1-F8	0.14351	0.14597	0.15009	0.15590	0.16345	0.17277	0.18394
Fp1-T3	0.05378	0.05961	0.06930	0.08281	0.10006	0.12098	0.14544
Fp1-T4	0.10166	0.10186	0.10221	0.10272	0.10339	0.10424	0.10532
Fp1-T5	-0.02312	-0.08808	-0.21886	-0.47172	-1.02781	-2.88551	31.20479

1. **Channels Section –** This section contains the labeling for all of the Channel Combinations
2. **Frequency Section –** This section will show all single hertz frequencies, and their isolated effective coherence (iCoh) value

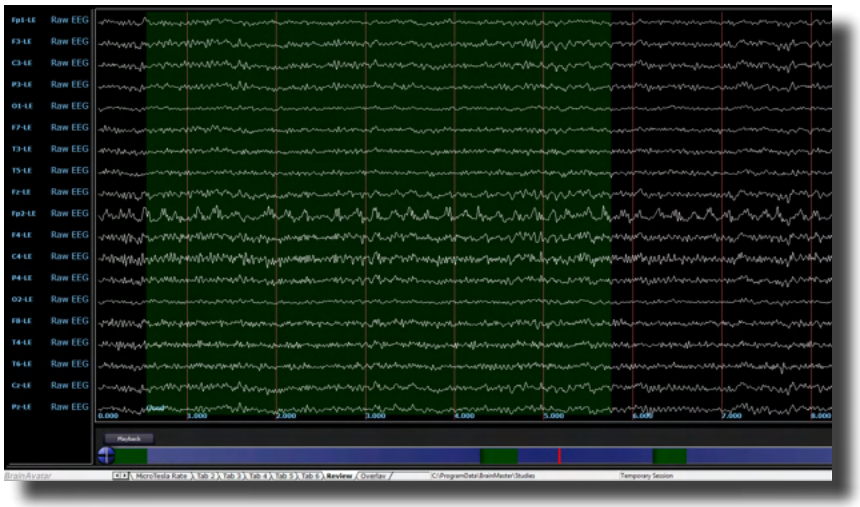
gPDC Section

Channels 1	1	2	3	4	5	6	7
Fp1-Fp2	2 0.29138	0.29640	0.30512	0.31813	0.33642	0.36153	0.39600
Fp1-F3	-0.52679	-0.53795	-0.55734	-0.58628	-0.62694	-0.68280	-0.75949
Fp1-F4	3.02285	3.06792	3.14623	3.26309	3.42726	3.65271	3.96214
Fp1-C3	0.00470	0.00493	0.00532	0.00590	0.00672	0.00785	0.00940
Fp1-C4	0.16678	0.16981	0.17506	0.18290	0.19392	0.20905	0.22982
Fp1-P3	0.00777	0.00841	0.00953	0.01120	0.01355	0.01678	0.02122
Fp1-P4	0.10472	0.10758	0.11256	0.11998	0.13041	0.14474	0.16443
Fp1-O1	-0.29874	-0.30416	-0.31357	-0.32762	-0.34736	-0.37447	-0.41168
Fp1-O2	-1.76714	-1.79406	-1.84084	-1.91065	-2.00873	-2.14343	-2.32831
Fp1-F7	0.03688	0.03792	0.03973	0.04244	0.04623	0.05145	0.05863
Fp1-F8	0.03380	0.03484	0.03664	0.03932	0.04310	0.04828	0.05541
Fp1-T3	0.01147	0.01292	0.01545	0.01922	0.02453	0.03182	0.04184
Fp1-T4	0.02283	0.02312	0.02362	0.02437	0.02544	0.02690	0.02894
Fp1-T5	-0.00456	-0.01650	-0.03725	-0.06824	-0.11181	-0.17169	-0.25395

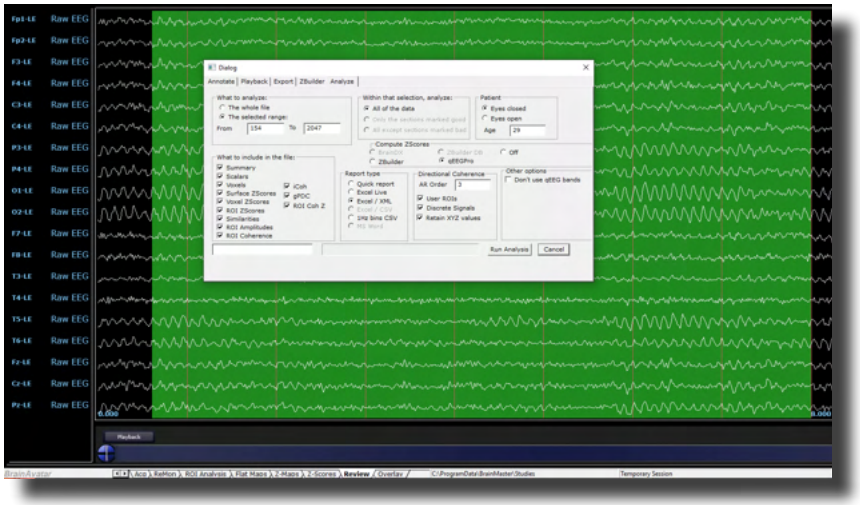
1. **Channels Section –** This section contains the labeling for all of the Channel Combinations
2. **Frequency Section –** This section will show all single hertz frequencies, and their generalized partial directed coherence (gPDC) value

Creating an Analyze File

1. Open the File that you would like to work with.Under the Review Tab, you will annotate based off of the instructions from the EDF Annotation Section.



2. When completed, either Double-Click in the EEG, or Hold down the Left-Click on the mouse, and select a section of data. This will bring up the Panel Options Menu. Navigate to the Analyze Tab, and use this menu to set the Analyze Settings as needed. When completed, click the Run Analysis Button.



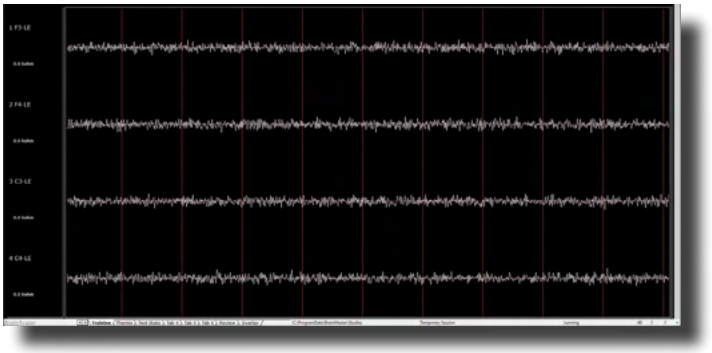
You have now created an Analysis File. You will be able to tell this has been created, based on the Report type that you chose. If Excel/XML or 1Hz bins CSV was chosen, then you will be able to utilize Windows Explorer to navigate to the patients directory and find the created files. If Excel/Live was chosen, then Microsoft Excel will open with the Requested information, for you to save as you would like. If Quick File was chosen, then a Built-in Spreadsheet application will open for you to be able to review the information. ***PLEASE NOTE:** You will not be able to save the information if you choose Quick File.

Software Themes

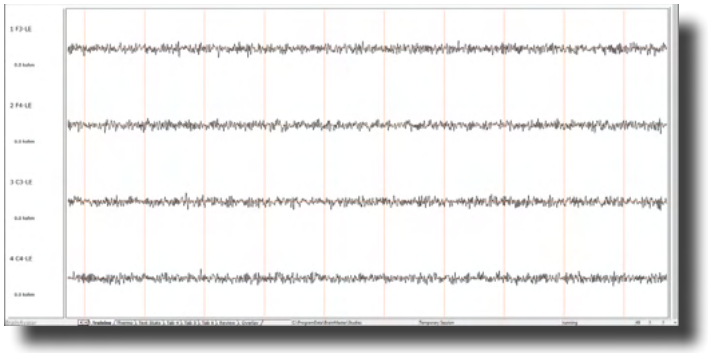
***PLEASE NOTE:** At this current version of software The Creating custom themes is not fully functioning.

Currently, there are three pre-built Themes to choose from. This can be located on the Training Screen by clicking the Themes Tab, and then choosing the options from the Select built in theme.

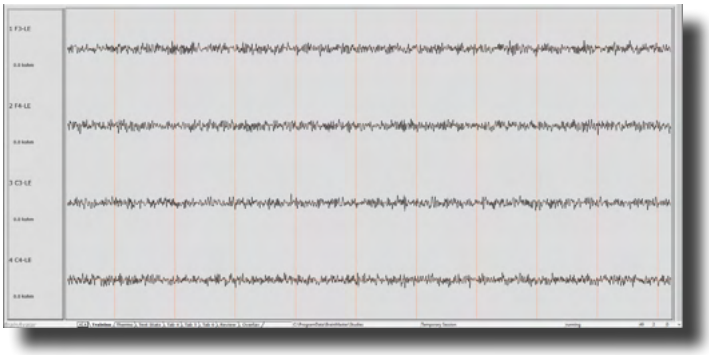
Built-In Themes



Black Theme



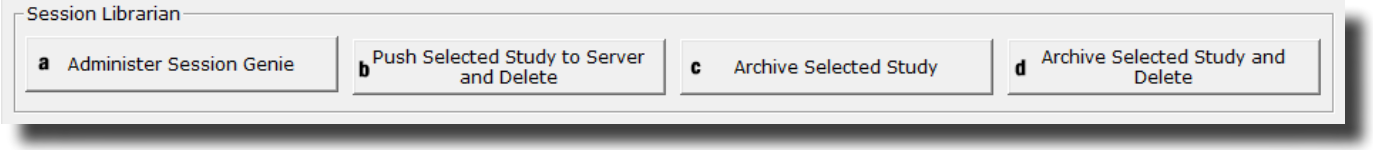
White Theme



BMZ Files

Creating A BMZ from a Study File

1. From the Setup Screen, click the Folder Selection Button or Folder Tab. This will bring you to the Select Folder Screen. On this screen, click the Archiving setting that makes most sense for what you are accomplishing.



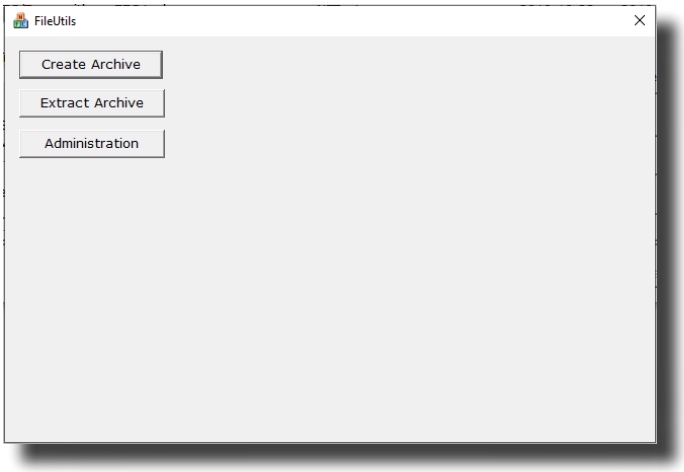
   a. **Administer Session Genie –** Choosing this option will open the BMz System to be operated only through the application. This is an Advanced Option not reccomended for users.

   b. **Push Current/Selected Study to Server and Delete –** This will create a BMZ file for either the Current Study the Software has open, or a Folder that has been selected in the Folder Selection Interface, and will delete the folder from the Patient Directory.

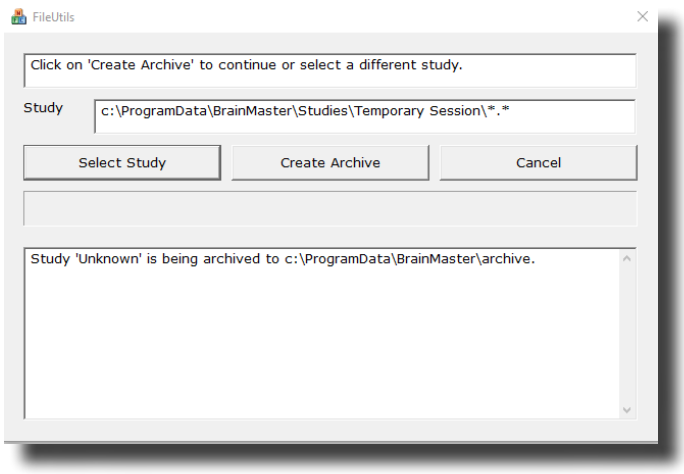
   c. **Archive Current/Selected Study –** This will create a BMZ file for either the Current Study the Software has open, or a Folder that has been selected in the Folder Selection Interface, and walk you through the next steps.

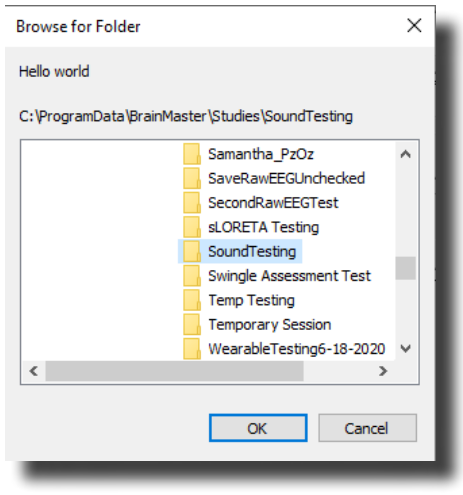
   d. **Archive Current/Selected Study and Delete –** This will create a BMZ file for either the Current Study the Software has open, or a Folder that has been selected in the Folder Selection Interface, and will delete the folder from the Patient Directory.

2. When the BMZ Application Open, choose Create Archive Button (Selection A only).

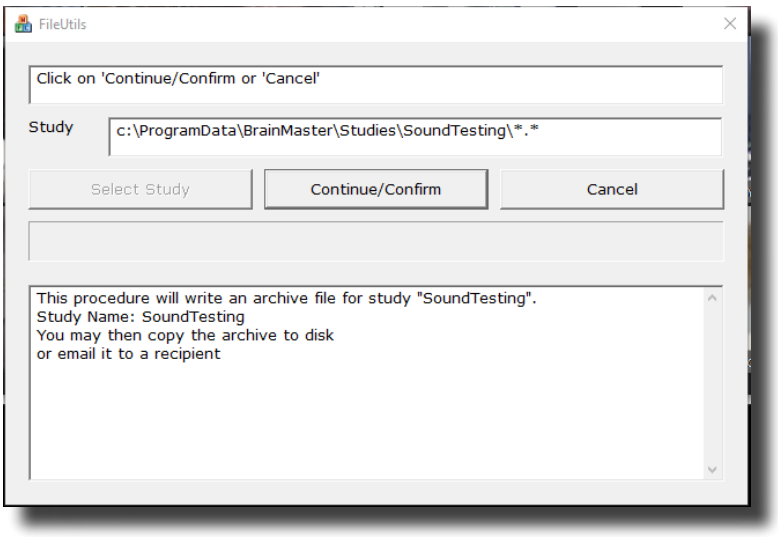


3. On the next screen, click the Select Study Button to utilize the File Selection system to select the proper Folder for Archiving. When selected, click the OK button to return to the BMZ App, aclick Create Archive to continue (Selection A only).

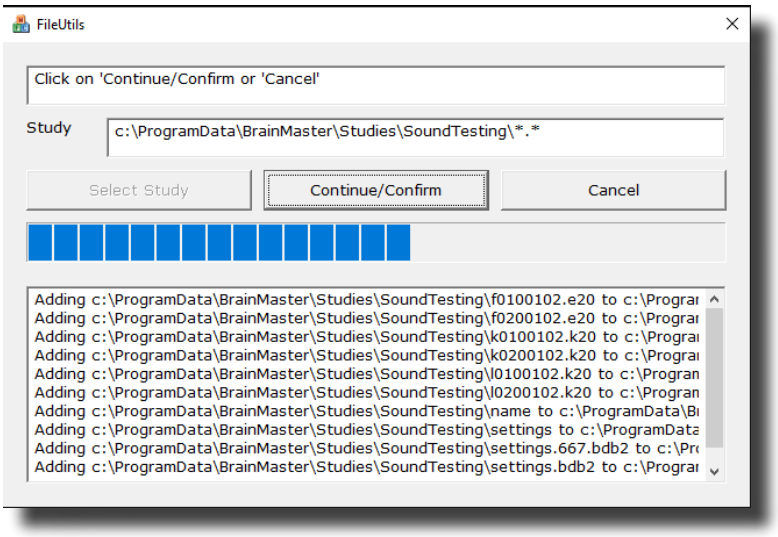




4. The BMZ App will then ask to confirm that you have the proper folder for Archiving. Click Continue/Confirm to begin the Archive Process (Selection A, C, & D).



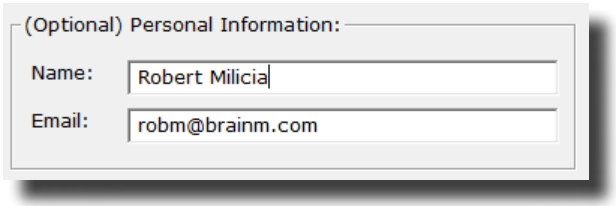
5. The Archive system will now begin. Depending on the size of the folder, will be dependent on the length of time this will take. The system will continue when the Archive is complete.



6. When the Archive has been created, the system will ask what you (Selection A, C, & D):

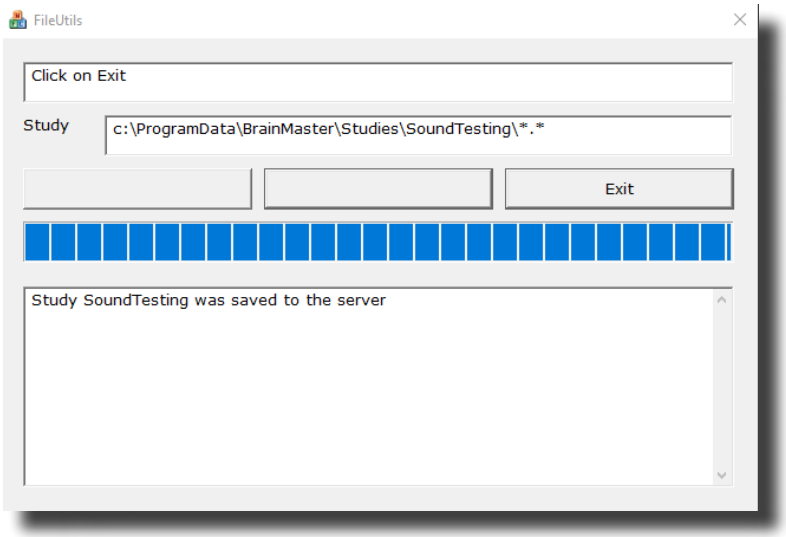
   A. **Copy Archive to Disk** – This option will allow you to direct where the bmz file is saved. If you choose this option, an extra screen will appear that you will have to confirm what you have done on.

   B. **Email Archive** – In order for this to work properly, two things are needed. First, proper E-mail information needs to be filled in from the Login page(See attached Picture). Second, the E-Mail account has to be tied through Microsoft Outlook.

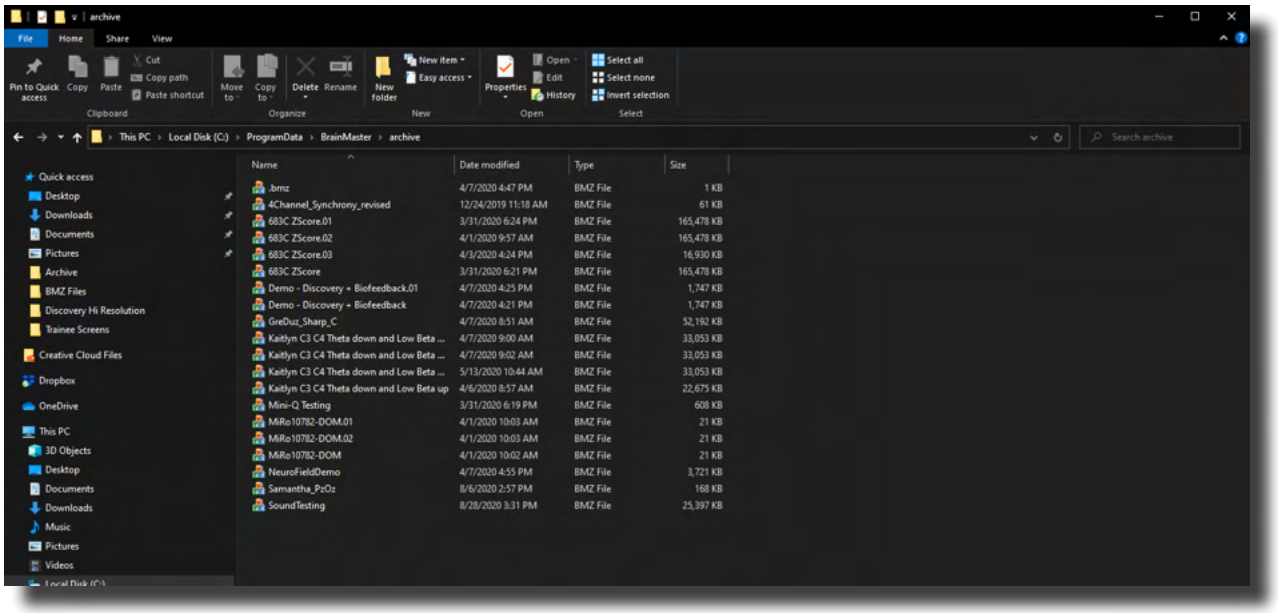


   C. **Copy Archive to Server** – This is the option that most people will use. This will still create the BMZ, but it will not E-Mail it, or save it to a specified location, it will simply create the BMZ File at C:\ProgramData\BrainMaster\archive

7. After you have made your selection, it will now finalize the Archive process. Depending on the size of the folder, will be dependent on the lenght of time this will take. The system will continue when the Archive is complete



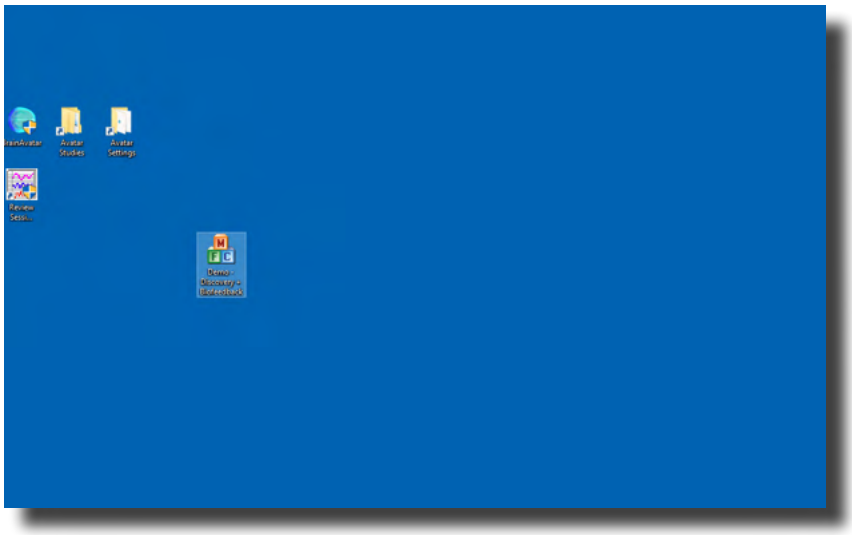
You now have a BMZ file created. You will be able to tell this is complete by seeing the achive of the folder in c:\ProgramData\BrainMaster\archive. Or, if you directed to another location, you will be able to find this file in this location.



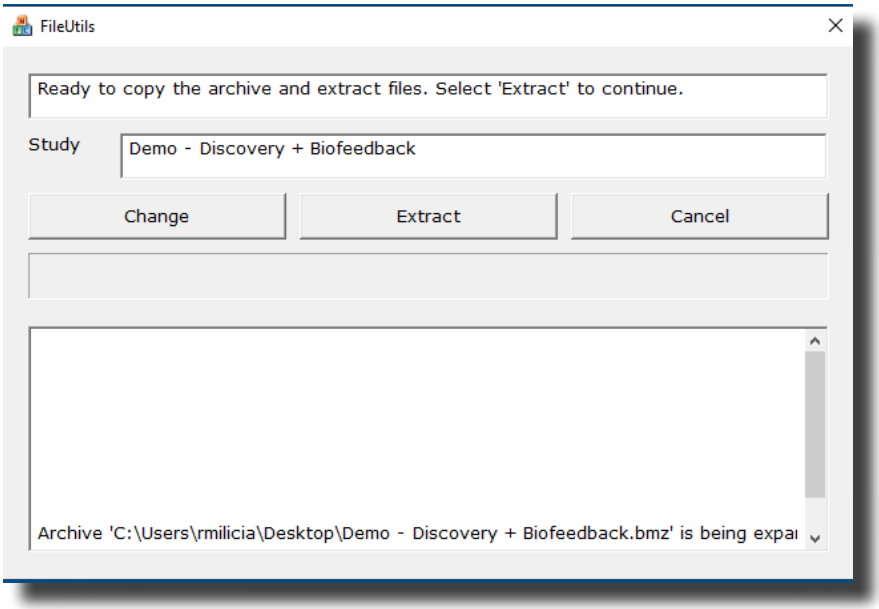
BMZ Files

Import Received/Downloaded BMZ Files

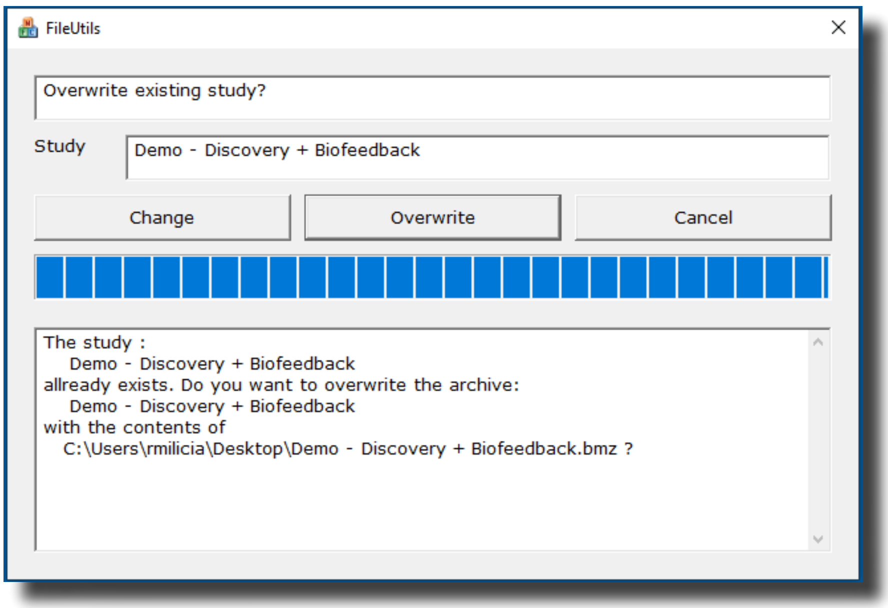
1. There are multiple ways that you might receive a BMZ file, which can be, but are not limited to Email, Removable Media, or Cloud Storage System. You will need to utilize the Windows Operating System to place the BMZ onto your PC, then Double-click the file to begin the Session Librarian System.



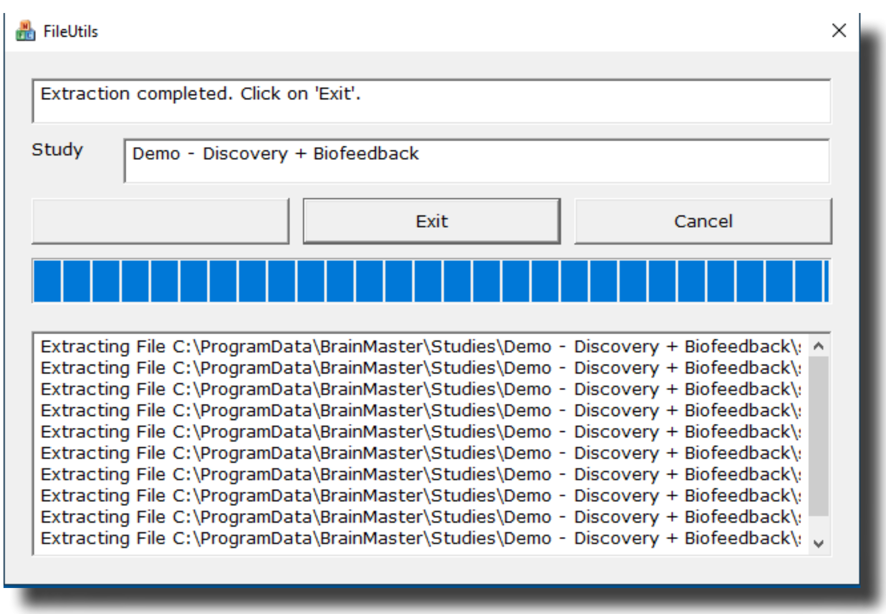
2. The following message will pop up and ask what you would like to do. Click the extract button to continue.



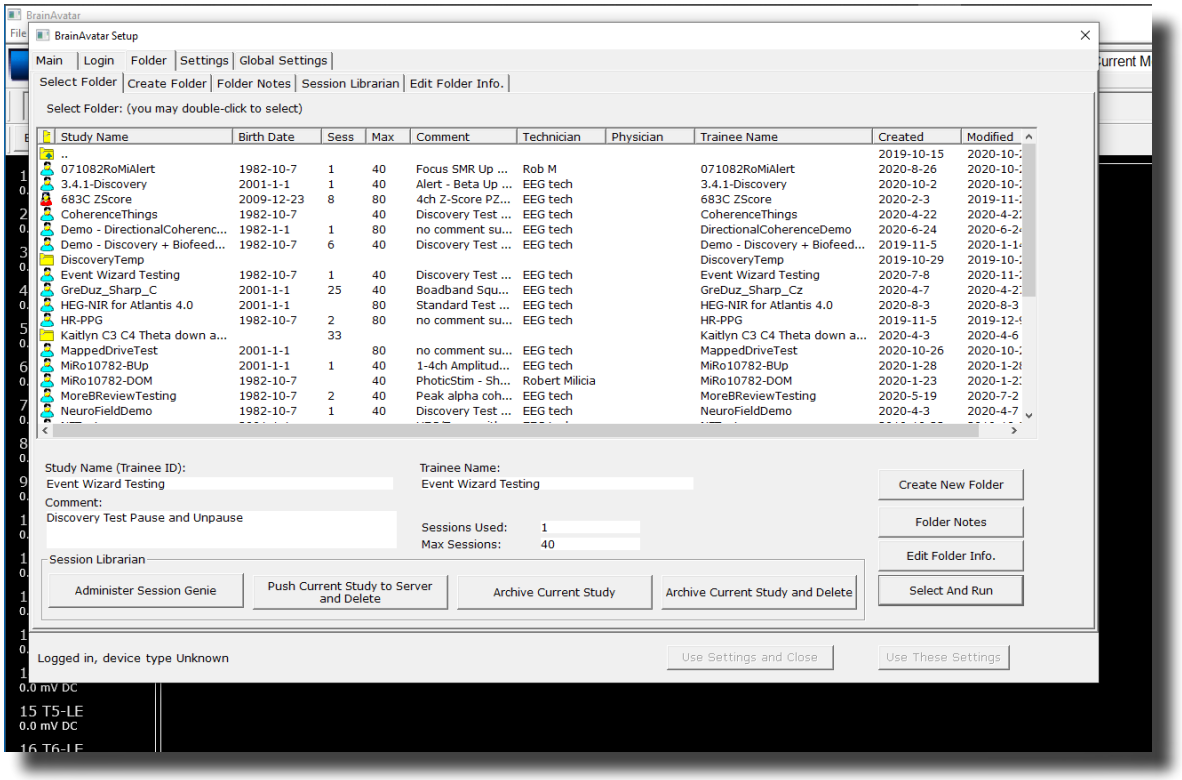
3. If you have a Study folder, with the exact name, then you will have click Overwrite to overwrite the existing folder. Click the Overwrite Button to continue



4. The system will go through its process of extracting to the required location. When it is completed, click the Exit Button to continue.



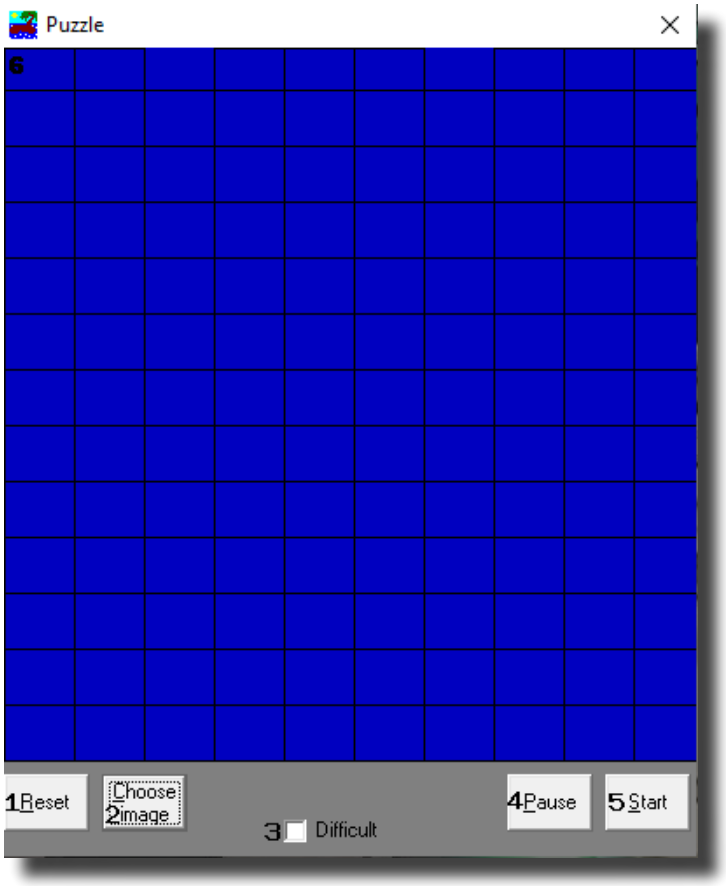
The folder is now expanded for use in your studies folder. You can access this folder by clicking Folder Selection Button on the BrainMaster Setup/Home Screen.



BMr Extras

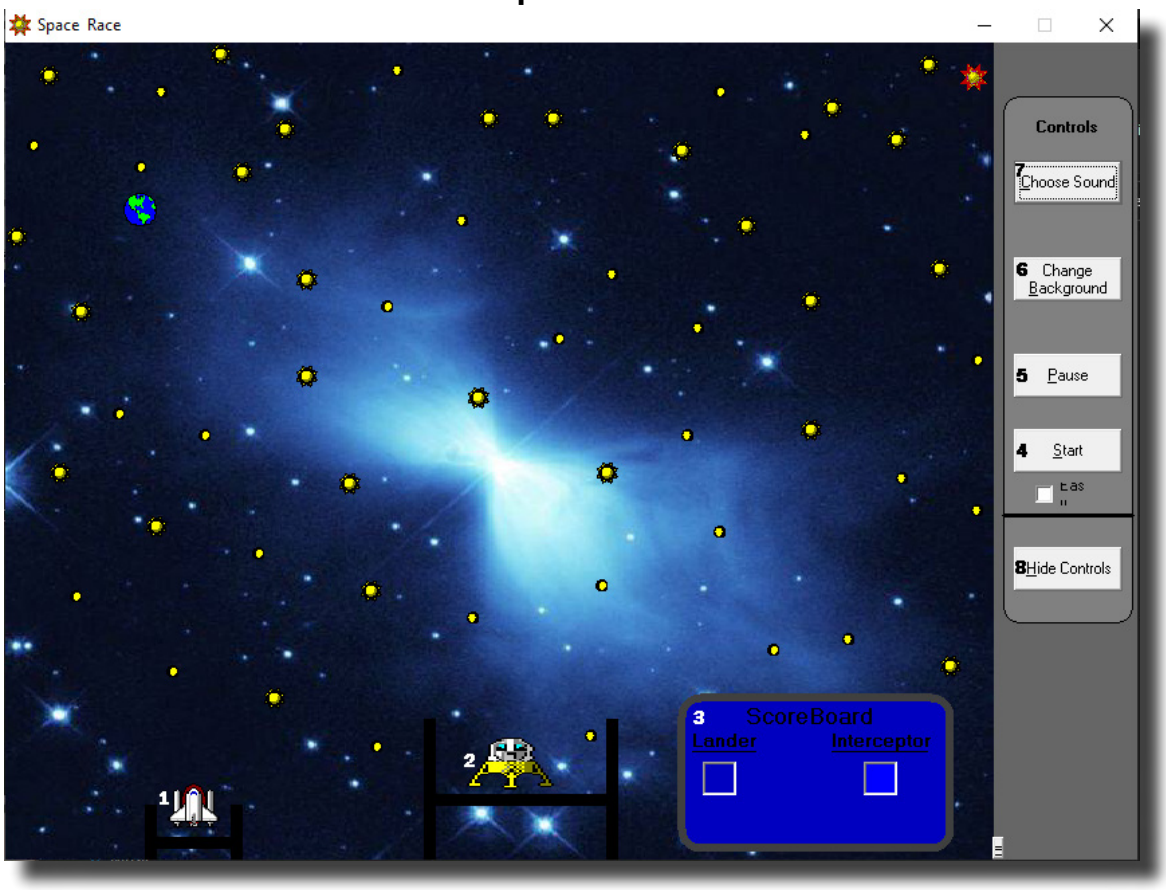
BMr Contributed Games

Puzzle



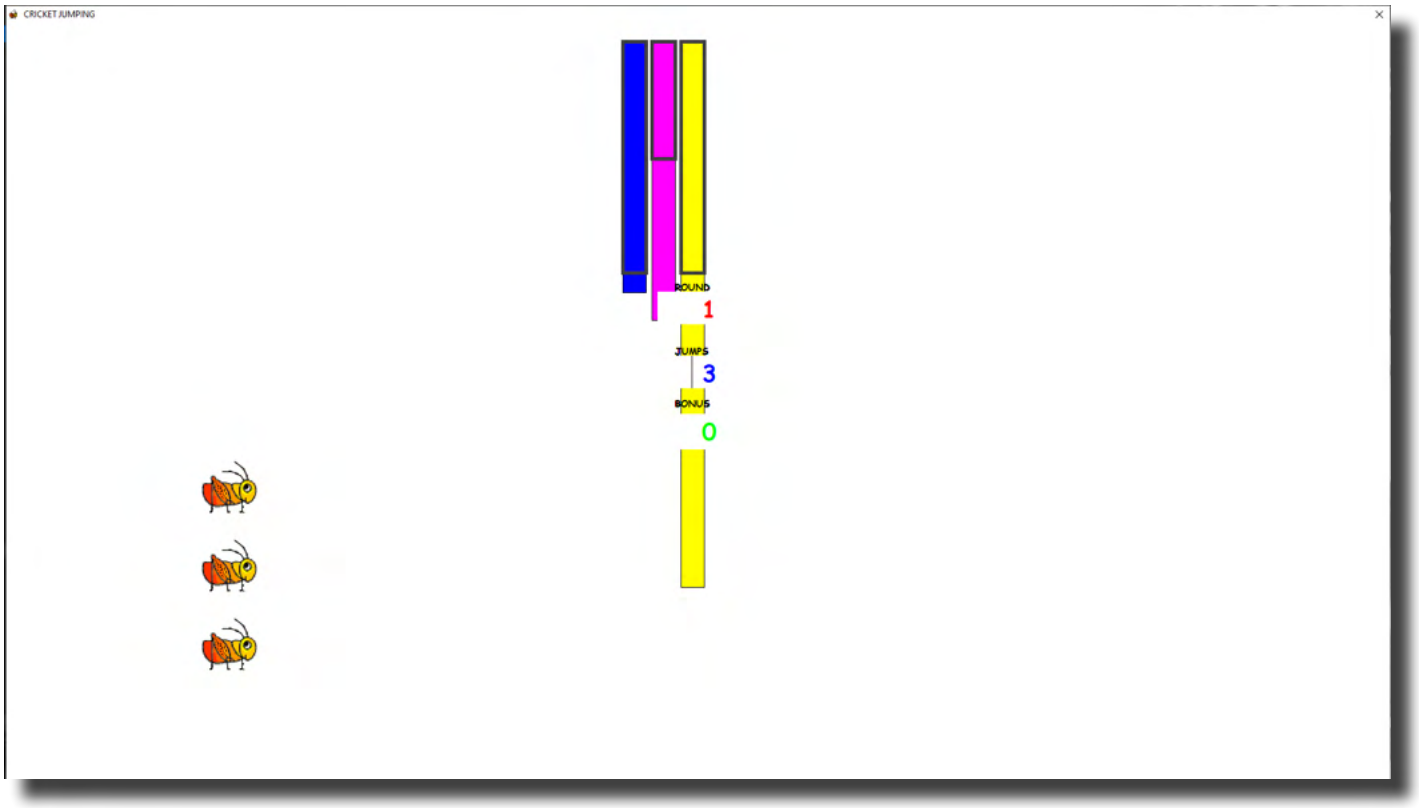
1. **Reset Button** – Click to make the blue squares visible. This can also be performed by clicking Alt + R.
2. **Choose Image Button** – Click to place a new image behind the blue squares. This can also be done by clicking Alt + C.
3. **Difficulty Check Box** – Check to change the difficulty. If the difficulty is checked on, then the customer must score two points to reveal a piece of the picture.
4. **Pause Button** – Click to pause the game in progress. This can also be performed by clicking Alt + P.
5. **Start Button** – Click to start the game. This can also be performed by clicking Alt + S.
6. **Display** – This is display, which is a square covered with 130 small blue squares. The puzzle will be revealed one square every time a point(depending on difficulty) is scored in the Brain-Master software.

Space Race



1. **Interceptor –** The Interceptor Rocket will advance when points are not being scored.
2. **Lunar Lander –** The Lunar Lander will advance whenever points are scored. The object is to get the lander to the top of the screen before the interceptor.
3. **Score Board –** Section that keeps track of how many times each ship wins the race.
4. **Start Button –** Click to start the game. This can also be performed by clicking Alt + S.
5. **Pause Button –** Click to pause the game. This can also be performed by clicking Alt + P.
6. **Change Background Button –** Click to choose between several background images for the screen. This can also be performed by clicking Alt + B.
7. **Choose Sound Button –** Click to choose an explosion sound(if you desire) for when the lander wins the race. There are several that are included. This can also be performed by clicking Alt + C.
8. **Hide Controls Button –** Click to shrink the screen and obscure the control buttons. This can also be performed by clicking the Alt + H. To get the controls back, click Alt + "=".

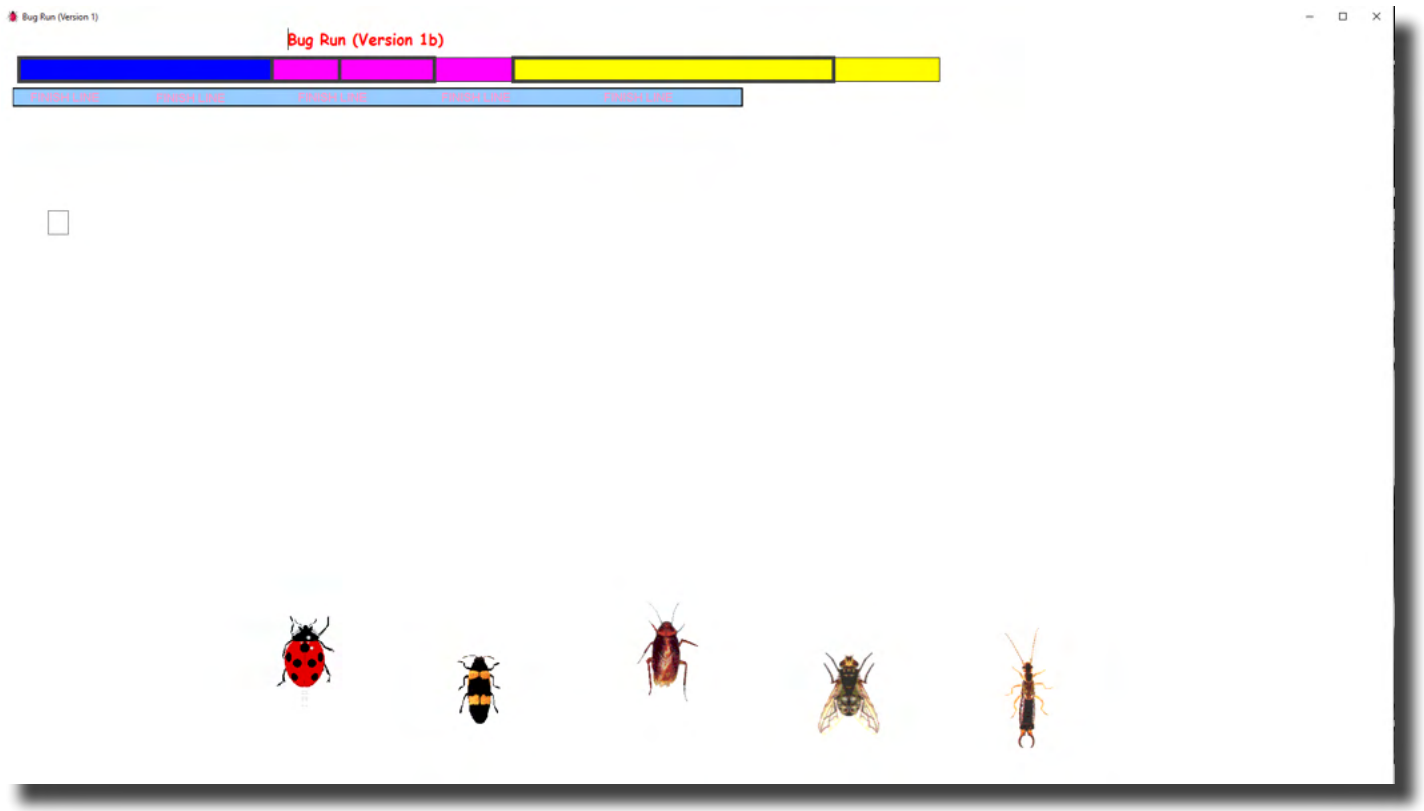
Cricket



As training proceeds, the crickets “stack up” and pile on top of each other.

Later on, the bottom images change, bonus points are awarded, and the screen becomes more interesting.

Bug Run

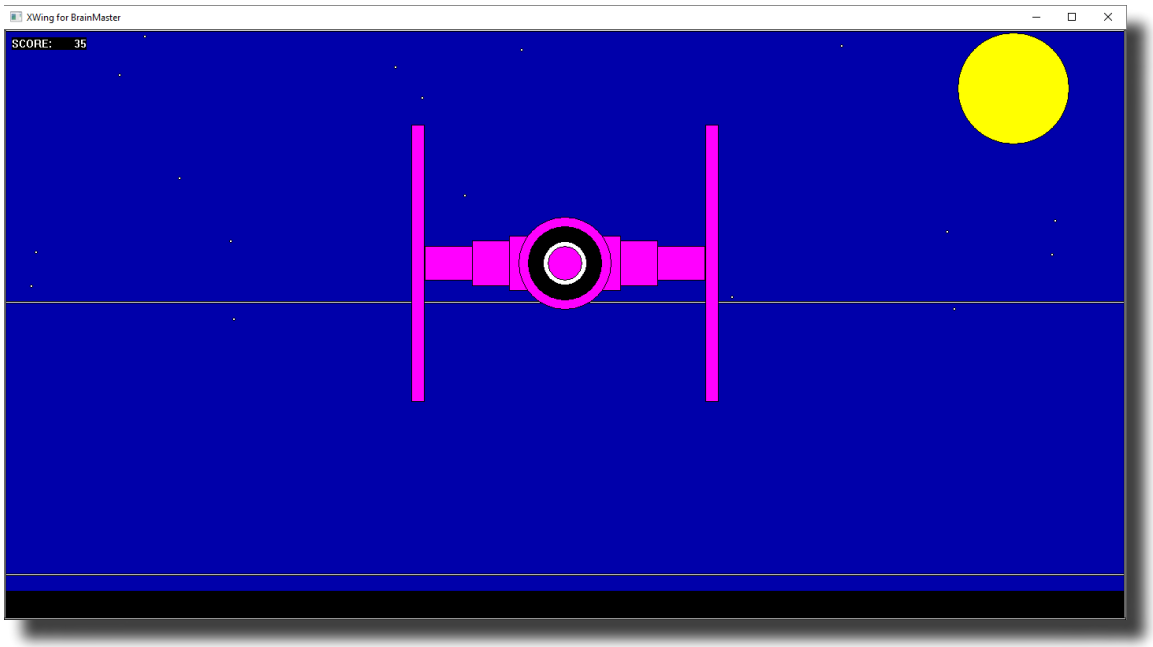


This screen provides a “bug race”. As the trainee meets the training criteria, the bugs will advance at random, running a race. If the trainee has excessive amounts of “stop” component, some of the bugs will slip down a bit, and fall behind. The goal of the game is to have the race progress.

After a while, one of the bugs will win, and be declared the winner.

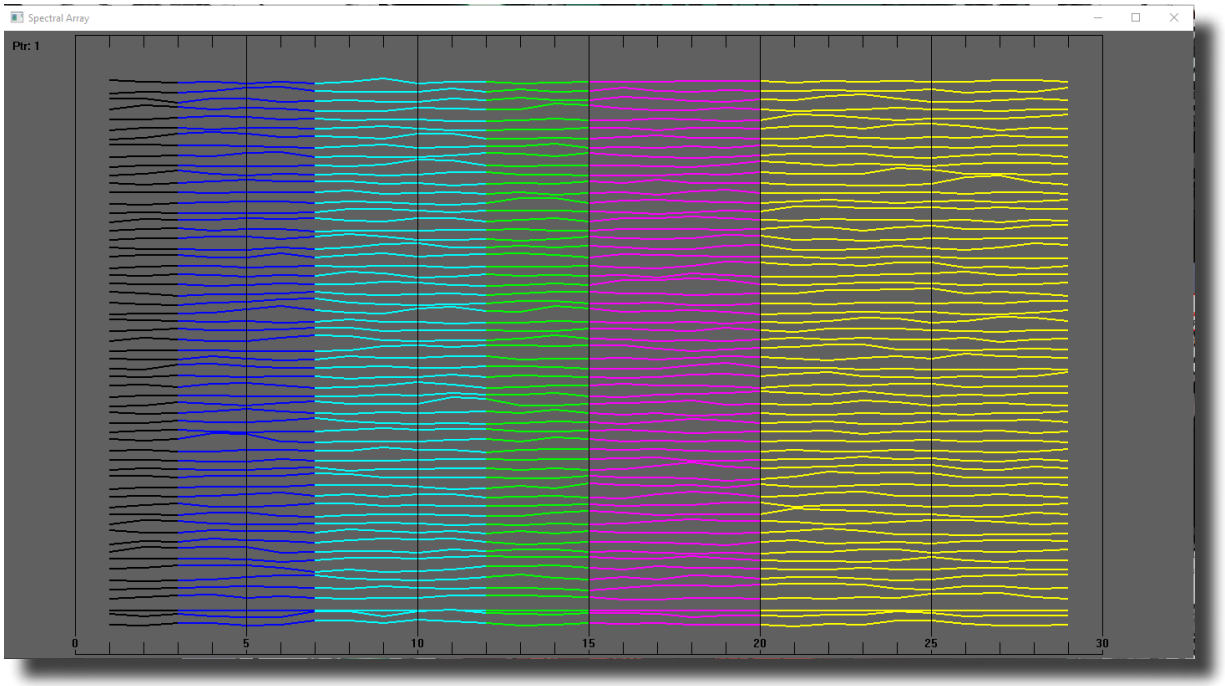
BMr Popups Displays

X-Wing



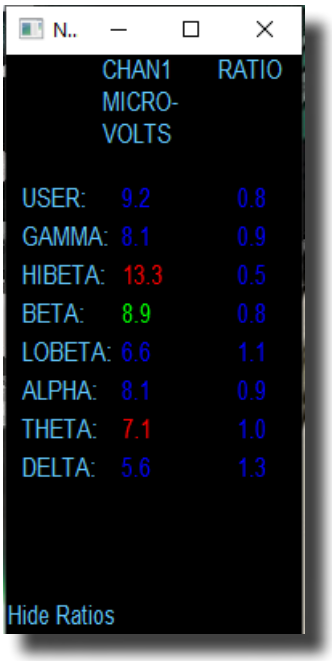
Display Type: Game
Requirements: Basic amplitude training
Brief Description: The space ship will rise when the reinforced component (e.g. lobeta or beta) is high, and the ground will rise when the inhibited component (e.g. theta) is high. Both thresholds are shown as lines on the screen. When a point is scored, the spaceship will briefly turn red, and the point will be registered in the indicator area. When two channels are trained, this window shows two space ships, with the left panel showing Channel 1, and the right panel showing channel 2.

2D Spectral



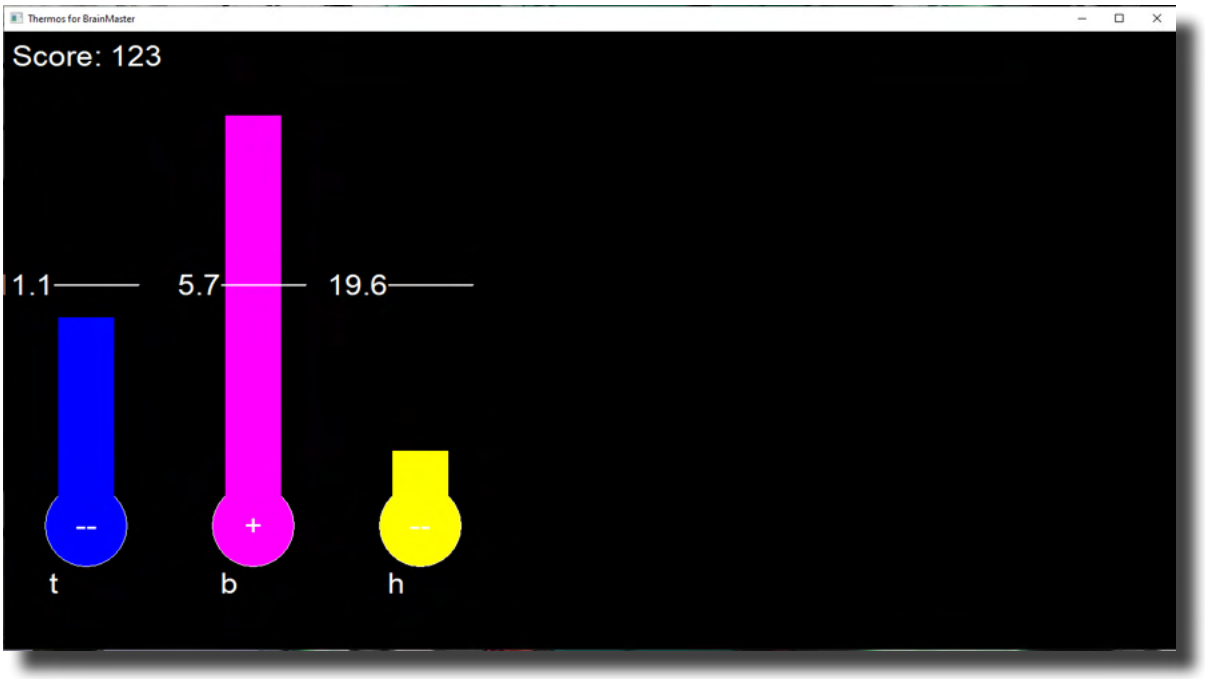
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This provides a cascade of past FFT spectra, covering the previous 1 minute of activity. Each frequency band is colored according to the frequency ranges selected. This coloring is the same as used on the FFT and the BrainMirror displays. There are tic marks and the labels to identify the frequency coordinates of the display. When two channels are used, two spectra are shown.

Numbers



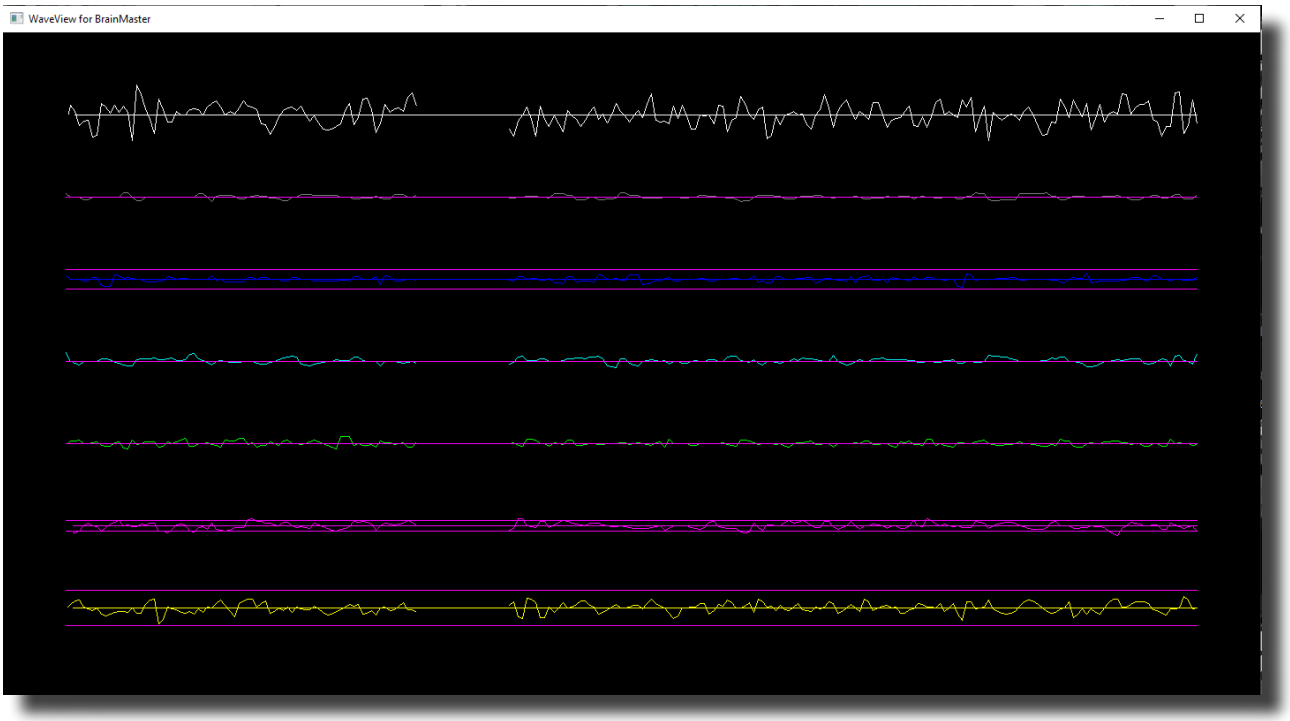
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This screen shows numeric values for each component. "GO" components are shown in green. "STOP" components are shown in red. All other components are shown in blue. The values are "damped", so they do not change too quickly. Ratios to theta can be shown by selecting the bottom text with the mouse. In 2-channel mode, it shows both channels.

Thermos



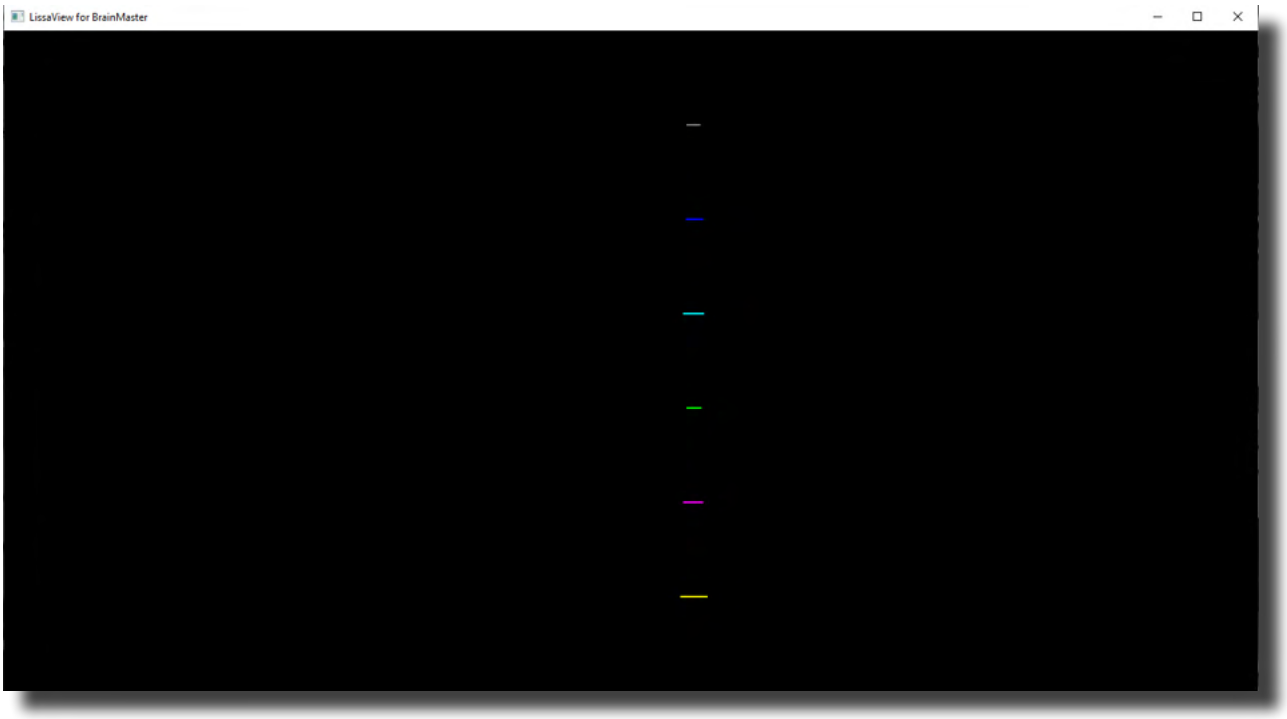
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This window shows each of the major EEG component intensities as a bar graph with real-time response. “GO” components show a “+” in the bottom of the thermometer. “STOP” components show a “-“ in the bottom of the thermometer. Un-trained components will not be shown in this screen.

Waves



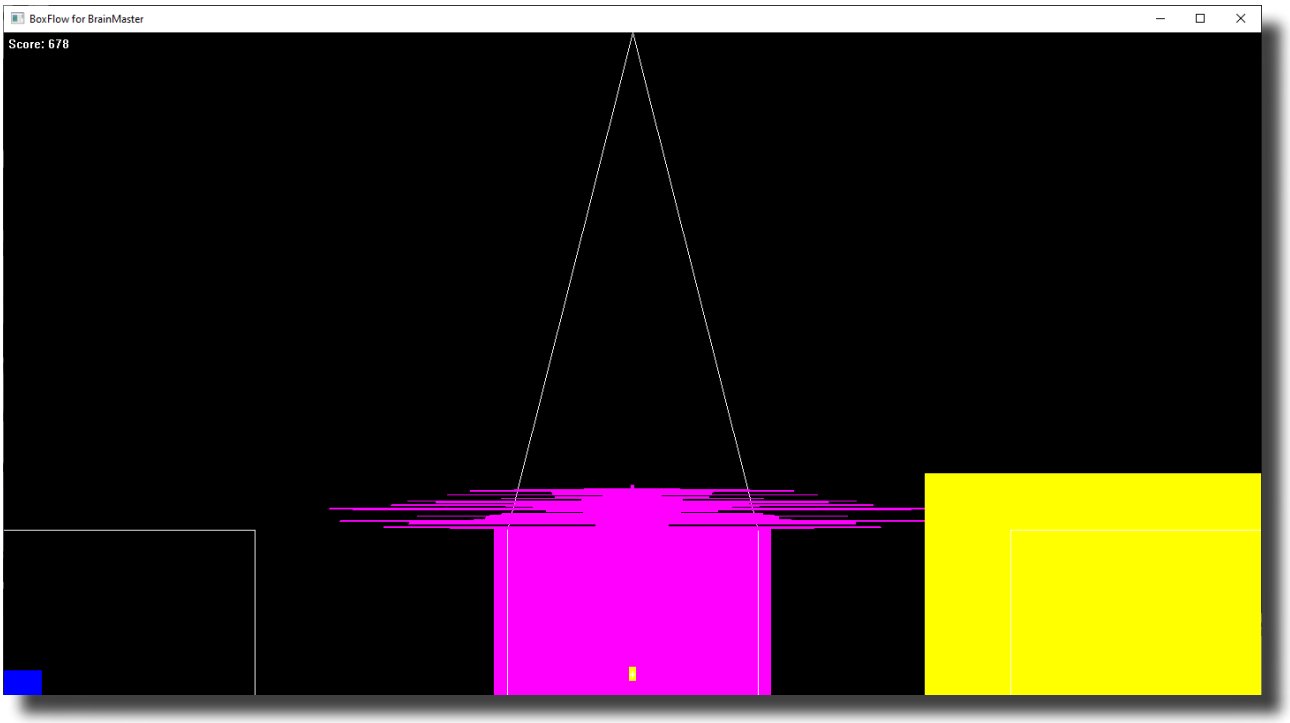
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This window shows the raw and filtered EEF waves in a resizable window. The display scal can be changed using the "+" and "-" keys, as usual. When two channels are used, both channels appear.

Lissaview



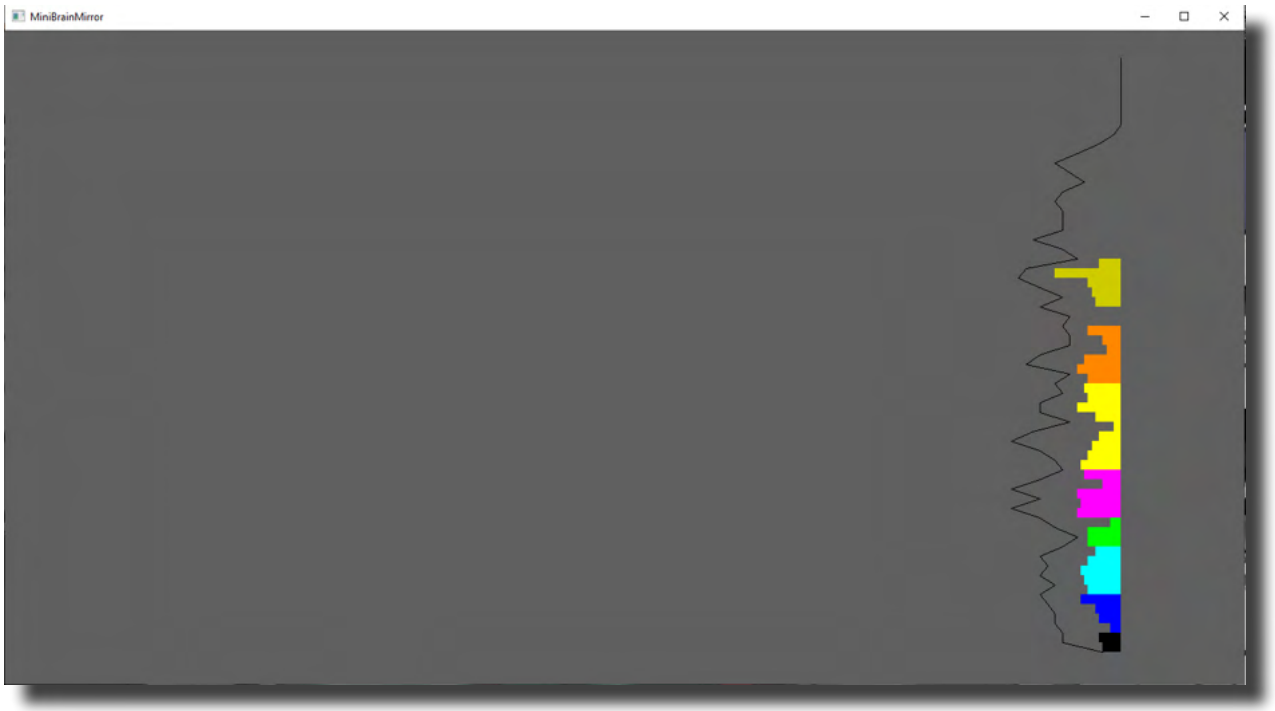
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This is a 2-dimensional display, using “rate of change” in place of the time axis. The vertical axis is exactly the same as in the EEG waveform display, while the horizontal axis is the first derivative of the EEG signal.

BoxFlow



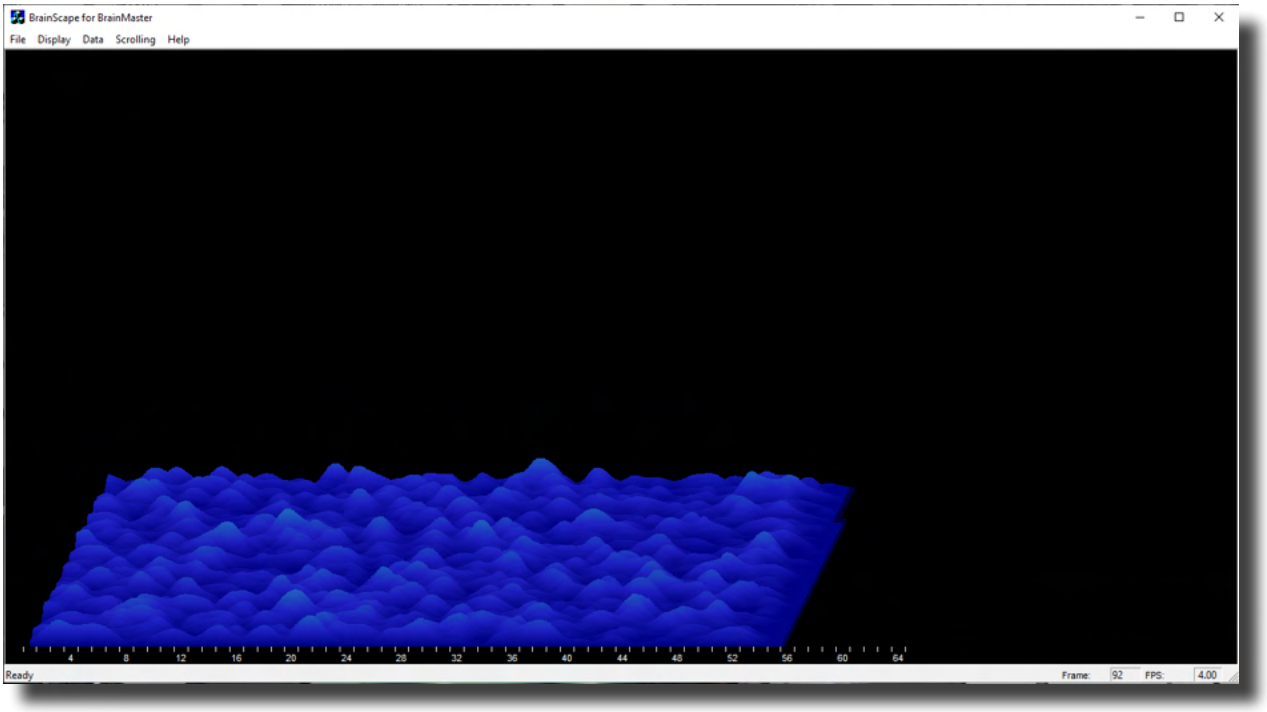
Display Type: Game
Requirements: Basic amplitude training
Brief Description: This is similar to that used in other common displays. The center box gets wider and narrower, so you can see the past history of the enhance band. You want it wide, to meet the threshold. The outer boxes are the “inhibits” and you want them small. If they get large, they encroach on the inner box, which inhibits feedback. When two channels are used, two “BoxFlows” appear.

MiniBMirror



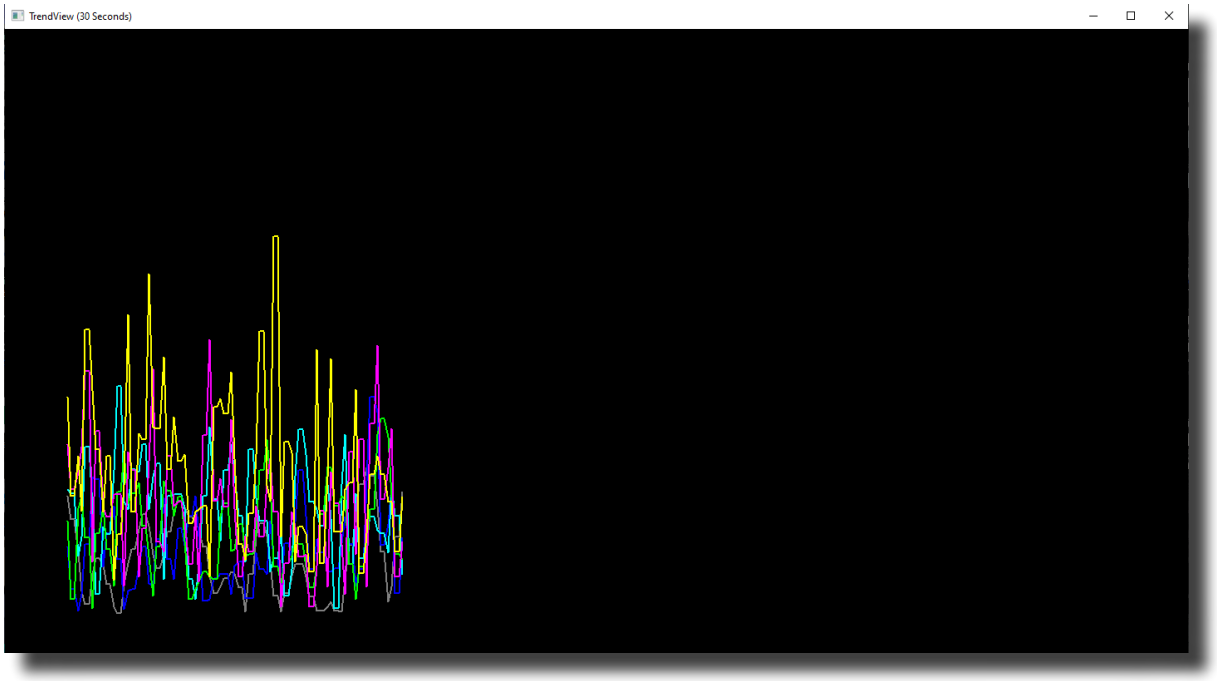
Display Type: Display
Requirements: Basic amplitude training
Brief Description: This window shows the BrainMirror in a resizable window. It uses the FFT to show the current EEG component values. The BrainMirror window also works in 2-channel mode.

BrainScape



Display Type: Display
Requirements: Basic amplitude training
Brief Description: BrainScape is designed to provide a 3-dimensional time/frequency representation of EEG signals, using a combination of frequency analysis, spline interpolation, and color-coded representation of signal amplitude. When two channels are used, a BrainScape for both channels appears. In two channel mode, when Sum/Difference channel mode is used, the two signals viewed are transformed into their sum and difference signals, and displayed in the usual manner.

TrendView

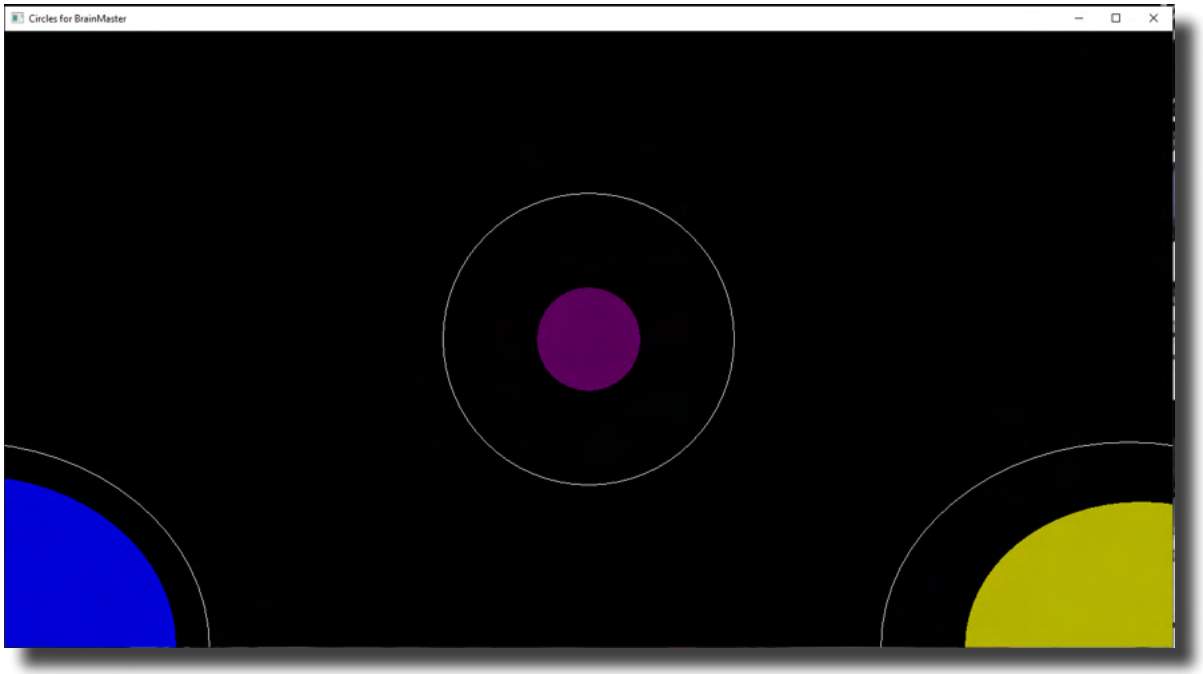


Display Type: Display
Requirements: Basic amplitude training
Brief Description: This shows the current and past activity of a component, in a plot of value vs. time, over a period of 30 seconds. After the plot reaches 30 seconds, it clears and redraws. The plot window displays only those components that are currently selected. When two channels are used, both appear on the display.

LongTrend

Display Type: Display
Requirements: Basic amplitude training
Brief Description: This shows the current and past activity of a component, in a plot of value vs. time, over a period of 30 minutes. After the plot reaches 30 minutes, it clears and redraws. The plot window displays only those components that are currently selected. When two channels are used, both appear on the display.

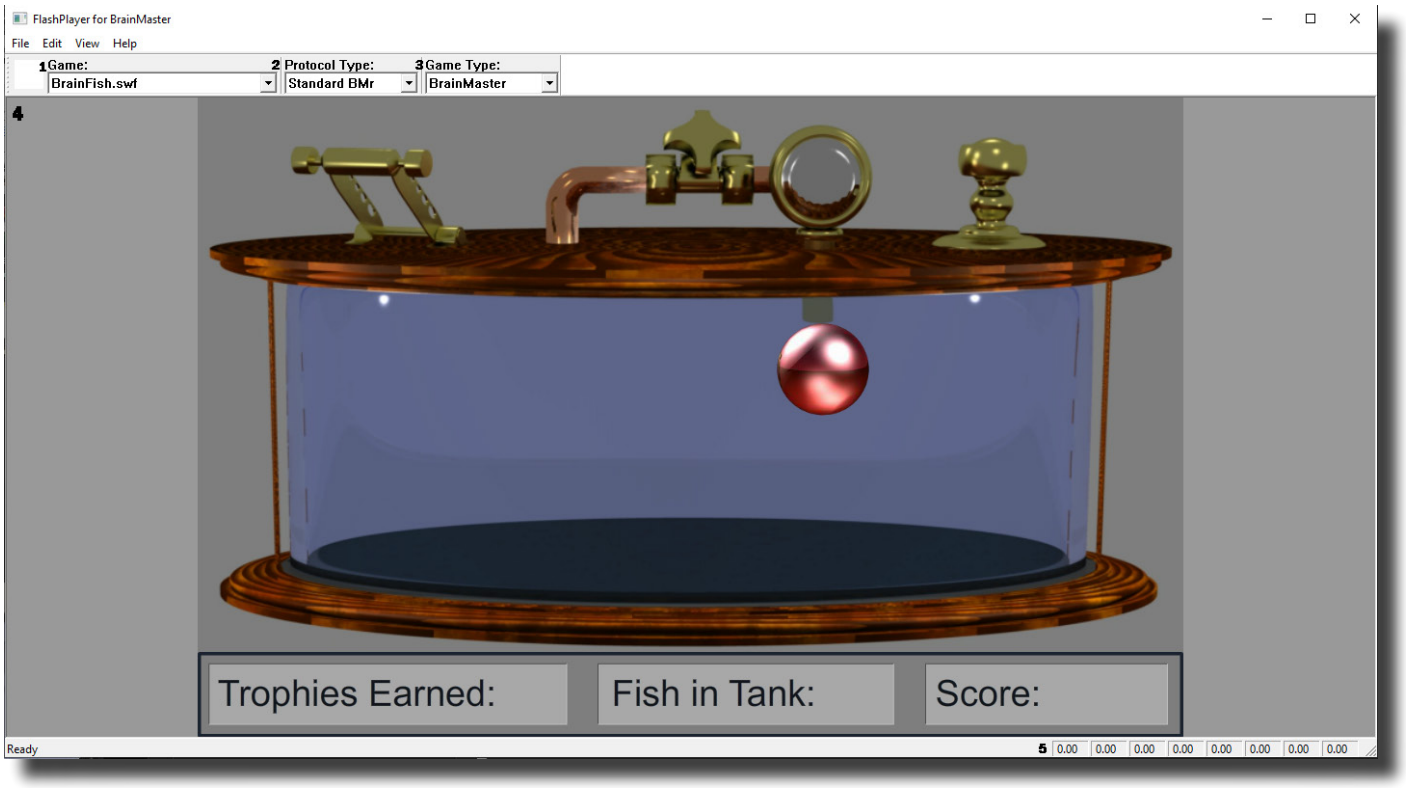
Circles



Display Type: Game
Requirements: Basic amplitude training
Brief Description: The Circles Window is similar to the BoxFlow, in that the center feature shows the main "uptrained" component, while the outer features show the high and the low "inhibits". When two channels are used, this window adapts, to show the two "uptrained" components as an ellipse (width represents channel 1, and height represents channel 2). In addition, the total of 4 inhibits are shown in the corners. Channel 1 inhibits are shown on the left, and channel 2 inhibits are shown on the right

BMr Flash Player

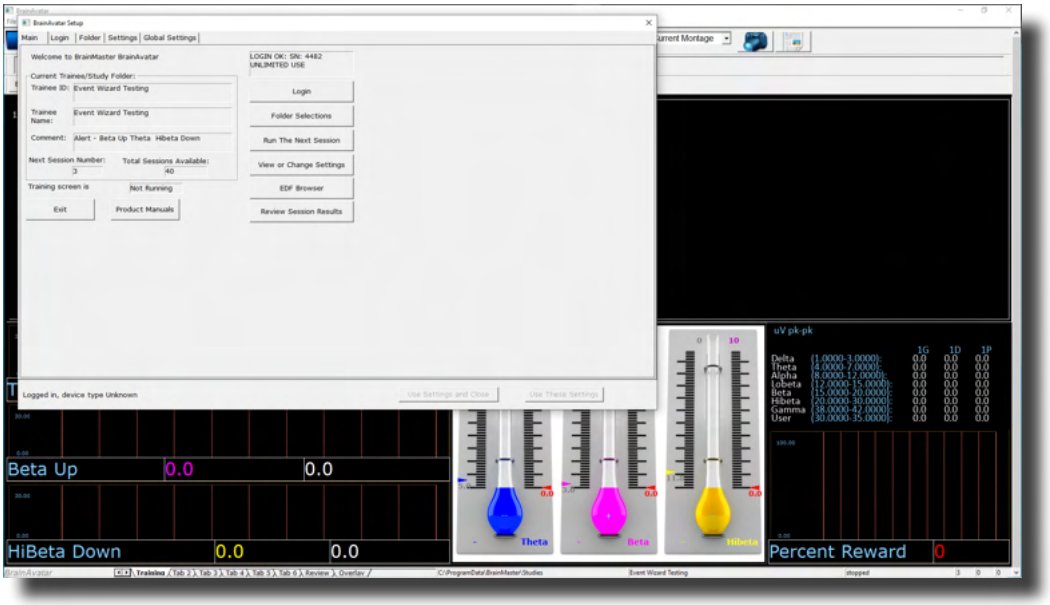
BMr Flash Player Control Menu Display



1. **Game Drop-Down Box** – Drop-down box where you can choose the game that you would like the Flash Player to use.
2. **Protocol Type Drop-Down Box** – Drop-down box where you can choose the type of Protocol you are using, whether it's a Standard BrainMaster, LZT-Live Z-Score, or RTZ-Real Time Z-Score.
3. **Game Type Drop-Down Box** – Drop-down box where you can choose the Game Type that the Flash Player is using.
4. **Display Window** – Display Window where the Flash Player Game is played.
5. **Event Wizard Readings** – Displays the information that is coming in from the Event Wizard.

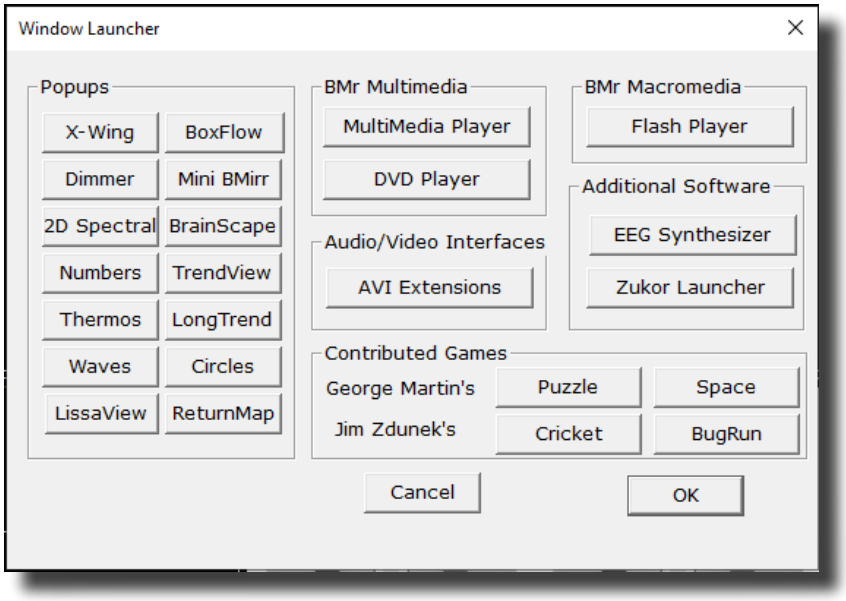
Using BMr Flash Player

1. Setup the training that you would like to use, or choose an existing folder that you would like to us, and click the “Run The Next Session” Button.

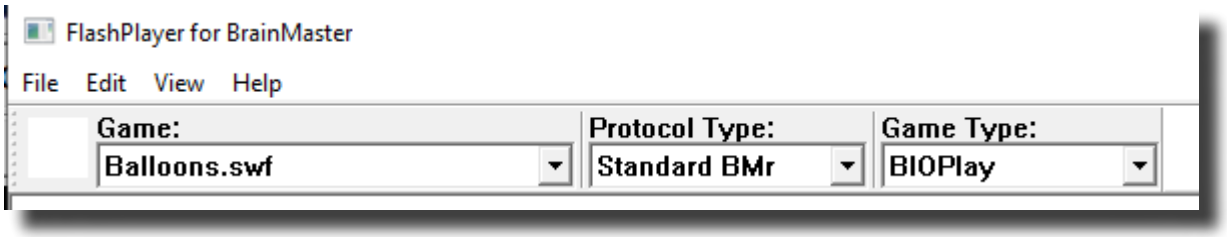


2. After you start the Session by clicking GO, click the “Window” Button.

3. In the Window Launcher Menu, click the “Flash Player” Button, located in the BMr Macromedia Section.

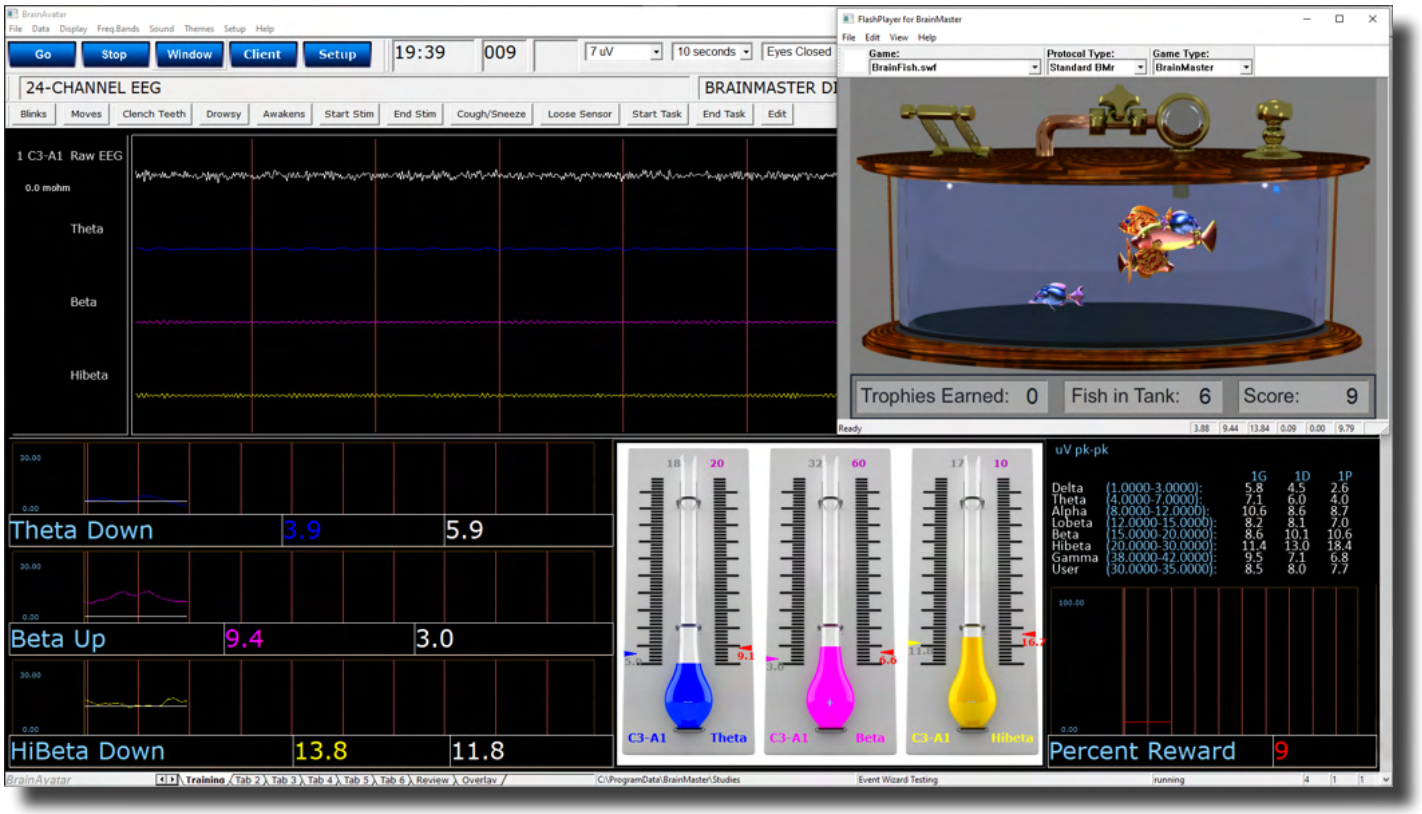


4. If you are choosing to utilize a BioPLAY FlashPlayer Game, change the Game Type to “BioPLAY”



BMr Flash Player

The Flash Player will now be running with the BrainMaster Software. You will be able to tell this has been successful, as the FlashPlayer Player for BrainMaster for BrainMaster Window will open, and the chosen Video file will play. Please make sure for proper use, the the Protocol Type, as well as the Game Type are properly set for optimal performance.



Flash Player Games

Color Quest (Adventure Games)

1. **Blimp –** Once a blimp has launched, the user will cause it to move every time its green progress bar fills up. When the blimp moves, it will move in the direction of the Colorful Ring(accuracy is dependent on user feedback). When the blimp hits the ring, it will change color. After 10 hits, the blimp will "spin out", causing it to disappear, restoring color to the game screen. There are 6 total blimps.
2. **Launch Pad –** When there is no blimp on-screen, the user must fill the green progress bar in the top-left corner. Once this happens, a new blimp will launch from the Launch Pad. Also, the pink lights on the Launch Pad will illuminate when the user meets the requisite feedback conditions.
3. **Colorful Ring –** This ring is the target of the blimp. When the blimp hits it, the blimp will change color. Also, the ring will spin when the user meets the required feedback conditions.
4. **Progress Bars –** These progress bars measure the overall feedback of the user. The "rainbow" feedback bar, on the left, displays the user's relative feedback for the last 3 seconds(i.e.: A full bar means the user met conditions 100% for the last 3 seconds, a half-bar means the user has met conditions 50% for the last 3 seconds, etc.). The green progress bar accumulates over time. If the user does not meet required conditions, the green progress bar will begin to descend. Filling the green progress bar once corresponds to 3 seconds of 100% feedback.
5. **Trophy Blimps –** As your blimp continually hits the Colorful Ring, three miniature models of your blimp will become visible, floating about in the background. They are purely aesthetic, and represent a visual reward for the user's hard work.
6. **Progress Panel –** The Progress Panel has six blimp-shaped outlines. As the user "completes" each of the six blimps, the blimp-shaped outline will be filled in with a gold blimp "token". This panel lets the user know how many blimps are left before the game is finished, as well as representing a visual reward for the user.

Similar Games – None

BrainCats 2 (Racing Games)

Opening Screen

1. **Select Cat Section –** Section where you select the cat who will run according to the user feedback.
2. **Race Length Section –** Section where you choose the length of the race. The non-user cats will take about this long to complete the race. Depending on the difficulty level and user feedback, the user could complete the race in a wide range of times. If the user meets the difficulty level consistently, they can be expected to take about as long as the non-user cats.
3. **Difficulty Setting –** Section where you set the difficulty. The difficulty corresponds to the percentage of client feedback that will put the player cat about "on par" with the race competition. The default value is 50%. For example: at a difficulty level of "25", the client will have to meet the required conditions about 25% of the time to keep up with their opponents in the race. As the client meets conditions more consistently, the chance of the client winning will also increase. So, in the case of "25", a client providing 35% feedback would have a good chance of winning the race.
4. **Sound On/Off Section –** Sections where you can control the sound settings for the game. The sounds act primarily as reward feedback, and appear in 5 different places during the game:
    a. At the games start
    b. At the result screen after a win
    c. When the user earns the Monkey Trophy
    d. When the user earns the Elephant Trophy
    e. When the user reaches the nighttime scenario
    f. When the user wins after completing the nighttime scenario
5. **Start Race Button –** Click to begin the game after all settings are set to your desired settings.

Race Screen

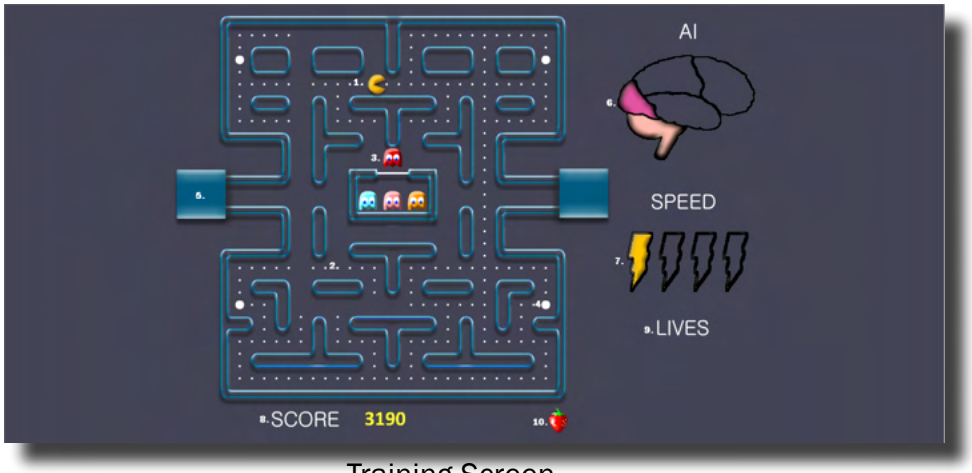
1. **Sun/Moon Graphics –** This graphic will move through the sky as you win more races. Eventually, when the sun passes the mountains on the west side of the screen, day turns into night, and the process begins again with the moon.
2. **Trophies Graphics –** As you gain points, trophies begin to appear. When the client meets feedback requirements, the trophies animate. Each stage has nine trophies, with three models. For the daytime, these are the ladybugs, hummingbirds, and monkeys. For the nighttime, these are bees, doves, and elephants.
3. **Race Track Borders –** When the client meets feedback requirements, the borders of the race track will light up around the players selected cat.
4. **Statistics Section –** Here, you can see the user's performance for that game.

Similar Games – BrainCats, BrainCats 3D, Blimp Race, Blimp Race 3D

BrainMan 2 (Arcade Games)

Title Screen

1. **Automatic Gameplay Selection –** Click to choose the Automatic Gameplay mode. This is more akin to the original BrainMan for BrainMaster. BrainMan will move automatically across the board. His movements are a direct response to the user's feedback. In addition, the user's feedback over the last six seconds will govern the "intelligence" of BrainMan's AI, with a more consistent feedback resulting in a more effective BrainMan.
2. **Manual Gameplay Selection –** Click to choose the Manual Gamelay mode. This mode boasts a more arcade-style of gameplay, with the user directly controlling the movement of BrainMan.



Training Screen

1. **BrainMan –** This is BrainMan. He moves according to the feedback of the user. If the user does not meet specified feedback requirements, BrainMan will not move.
2. **Pills –** When all the pills on a stage have been eaten, BrainMan will move on to the next stage.
3. **Ghosts –** These familiar foes begin to freely move about the screen on Stage 3. Unlike the ghosts that you are used to, these pose no threat to BrainMan. They are extra points, and can be eaten. If the client is meeting the requirements, then the Ghosts will be a blue color and will be able to be consumed. They will turn in to a set of eyes and have to return to their "base" to regenerate.. If the client is not meeting the training requirements, then the Ghosts will be their normal colors. If during this time, they make contact with BrainMan, they will pass through him.
4. **Power Pill –** The Power Pill delivers a reward sound to the client, and has a small chance of increasing BrainMan's speed for the duration of the level.
5. **Maze –** In this version, even the maze borders respond to the feedback. As the client meets requirements, the borders will become brighter and more saturated. Conversely, as the clinet fails to meet requirements, the maze will grow dark.
6. **AI Level –** The AI is the controller of BrainMan's movement. It is based on a combination of three things: the client's relative feedback, the client's progress through the game, and the client's progress through the level. As these values increase, you will notice the Brain begin to "fill up". This means that BrainMan will actually become smarter, and hunt pills more effectively.
7. **Speed Level –** This is self-explanatory. Much like the AI Level, it is governed by both the client's relative feedback and progress through the game. It does not however, measure progress through the level. Instead, it has a chance to temporarily increase when the user eats a power pill.
8. **Score –** This number is raised by eating Pills, Fruit, and Ghosts.
9. **Lives –** These do not affect gameplay. Rather, they function as "trophies". The user receives one life for every 8,000 points sored.
10. **Fruit –** Each level boasts a particular kind of Fruit. It will appear in the center of the game board for a brief interval of time during every level. They can be eaten for extra points.

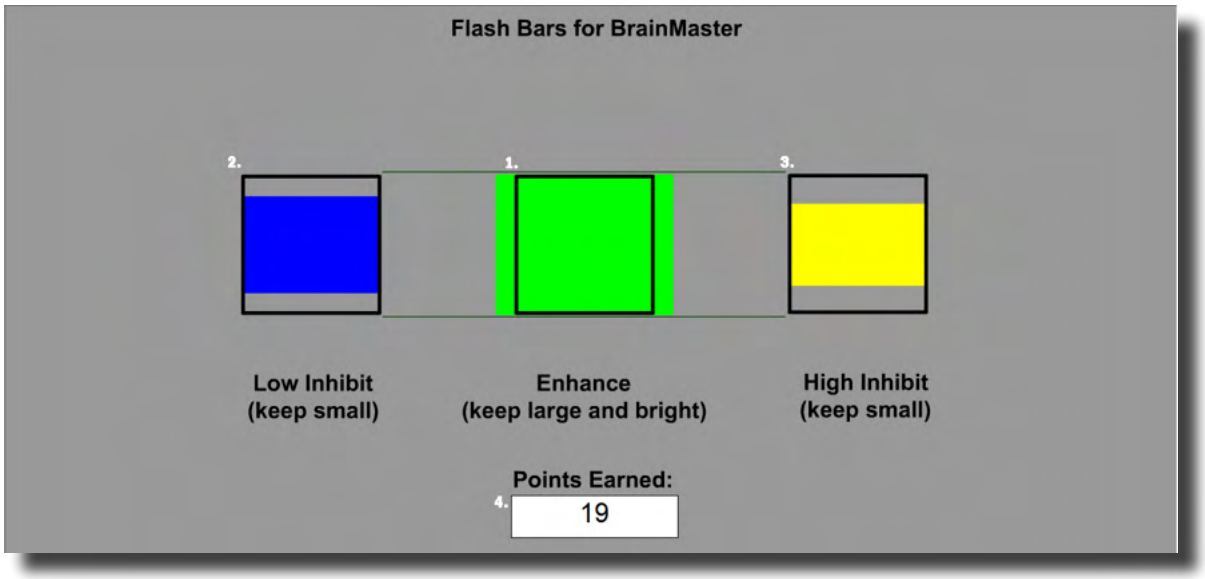
Similar Games - BrainMan, Board Game

BrainFish (Collecting Games)

1. **BrianFish –** The BrainFish are created when the trainee meets the training criteria continuously for a certain period of time(approx.. ½ second). The fish are moving quickly when the criteria are met, and slow down otherwise. The number of fish reflects the success in keeping in state over a period of time. 25 fish create a trophy fish, and all fish disappear and the client begins to build a trophy fish again.
2. **Trophy Counter –** This box counts the amount of Solar Systems that have been created.
3. **Fish Counter Counter –** This box counts the amount of Planets that have been created.
4. **Score Counter -** This box counts the total Score that has been calculated by the system. This will work if you have Points set up.
5. **Trophys -** This is where Trophys will appear after they have been collected. They will be a random color.

Similar Games – BrainPlanets, BrainPlanet1lite, BrainPlanets2, BrainPlanets2lite, BrainCell, NeuroPet

App Boxes (Amplitude Games)

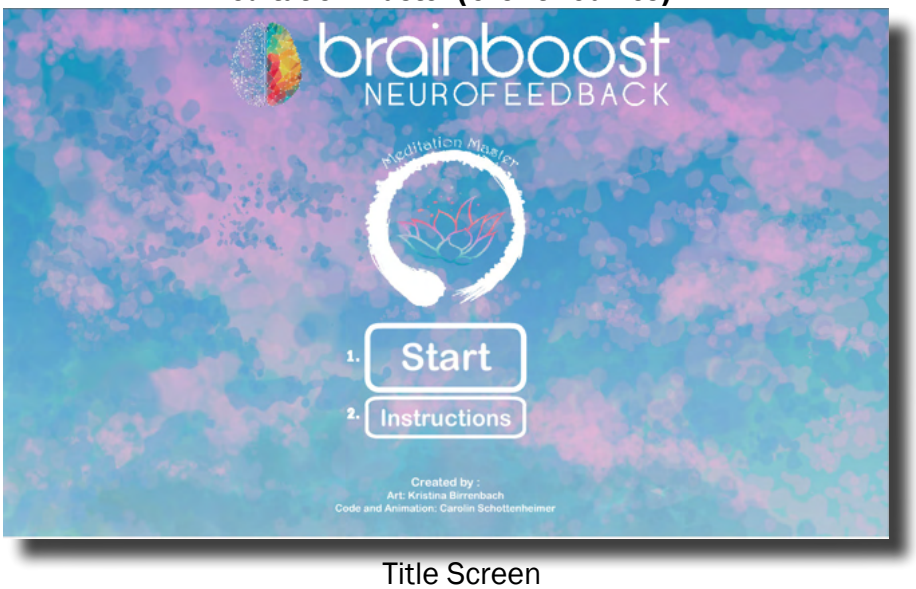


1. **Enhance Box –** Shows a box that represents the enhance band. This will increase and decrease in size horizontally, depending on your enhancement training.
2. **Low Inhibit Box –** Shows a box that represents the low inhibit band. This will increase and decrease in size vertically, depending on your low inhibit, and will also have an effect on the Enhance Box. When the inhibit goes above the threshold, they cause the Enhance Box to become dimmer. When both Inhibit boxes are above threshold, the Enhance Box is maximally dark.
3. **High Inhibit Box -** Shows a box that represents the High inhibit band. This will increase and decrease in size vertically, depending on your high inhibit, and will also have an effect on the Enhance Box. When the inhibit goes above the threshold, they cause the Enhance Box to become dimmer. When both Inhibit boxes are above threshold, the Enhance Box is maximally dark.
4. **Points Earned Box –** Box that displays the current amount of points that the client has earned during their training.

***Please Note:** This game is designed for use with Standard Amplitude Protocols only. If this is used with any other protocols, additional development is required via the Event Wizard.

Similar Games – None.

Meditation Master (Growth Games)

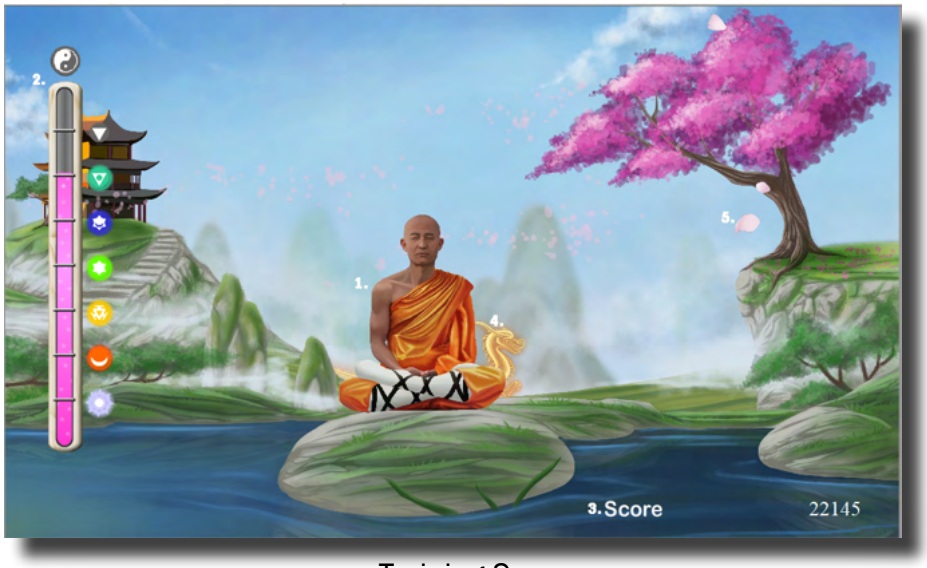


Title Screen

1. **Start Button –** Click to proceed to the Character Selection Menu
2. **Instruction Button –** Click to see very basic instructions that are beneficial for the clinician or Player

Character Select Screen

1. **Character Selection Menu –** Click on the Picture of the Meditator that you would like to utilize. Each Meditator has their own unique background and effects
2. **Back Button –** Click to return to the Title Screen



Training Screen

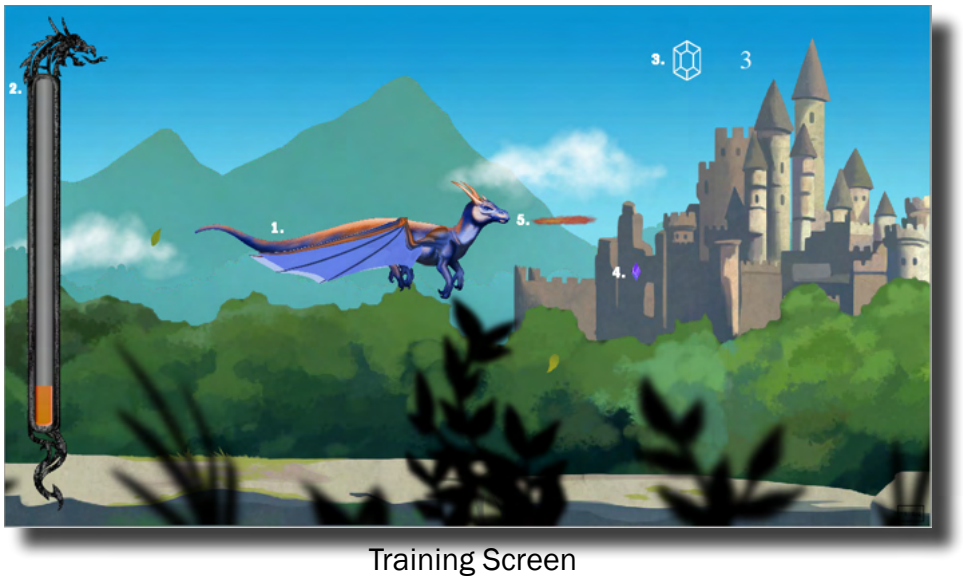
1. **Meditator –** As Training is successful, the Meditator will levitate themselves. As Training success is held, the Meditator will continue to levitate until they reach the top of the screen and will have a special animation.
2. **Progress Bar –** The progress bar has multiple Levels that can be reached. Each level they pass, the icons will grow, and cause a special animation in the background
3. **Score Section -** This is where you can see the clients total score. The score is not tied to the Brain-Master Point system and is its own system.
4. **Level Animation -** When the client passes a level. The Level Animation will occur in the background of the level
5. **Background Effect -** As the client is successfully meeting training, a special background image will pass through the level

Similar Games – NeuroJumper

NeuroFlight (Side Scrolling Games)

Title Screen

1. **Start Button –** Click on the Picture of the level that you would like to play. Each level has their own unique Flying Creature, background, and effects
2. **Info Button –** Click to see very basic instructions that are beneficial for the clinician or Player



Training Screen

1. **Flying Creature–** As Training is successful, the Flying Creature will increase their elevation. As Training success is held, the Flying Creature will continue to elevate until they reach the middle of the screen and begin to perform a Special Animation
2. **Progress Bar –** The progress bar fills to the top. As they progress, the Flying Creature Evolves.
3. **Score Section -** This is where you can see the total amount of Crystals collected, as well as the progress of new crystals and any special rewards.
4. **Crystal Animation -** When the client puts together a crystal. The Crystal Animation will occur in front of the Flying Creature.
5. **Special Animation Effect -** As the client is successfully meeting training, a special animation is added to the Flying Creature

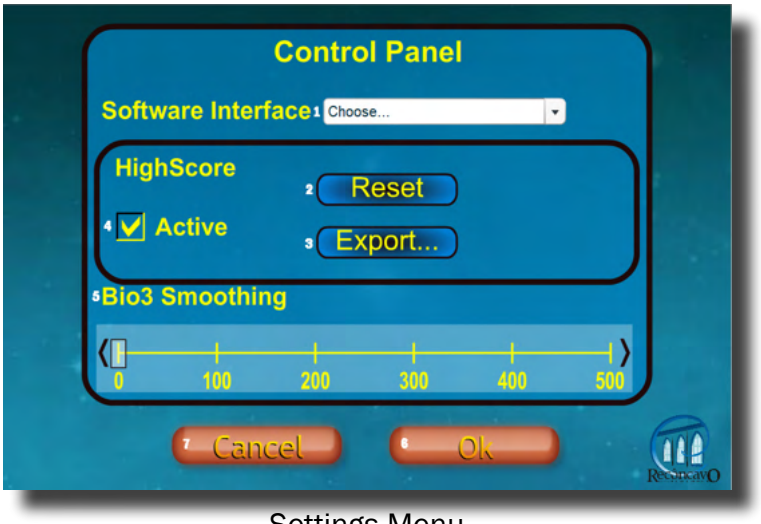
Similar Games – None

Fission Balls (Interactive Games)

Title Screen

***Please Note:** All Interactive Games Require interaction from the user. Either the mouse or the Keyboard. So, if this will not be possible during the session, please do not use these games

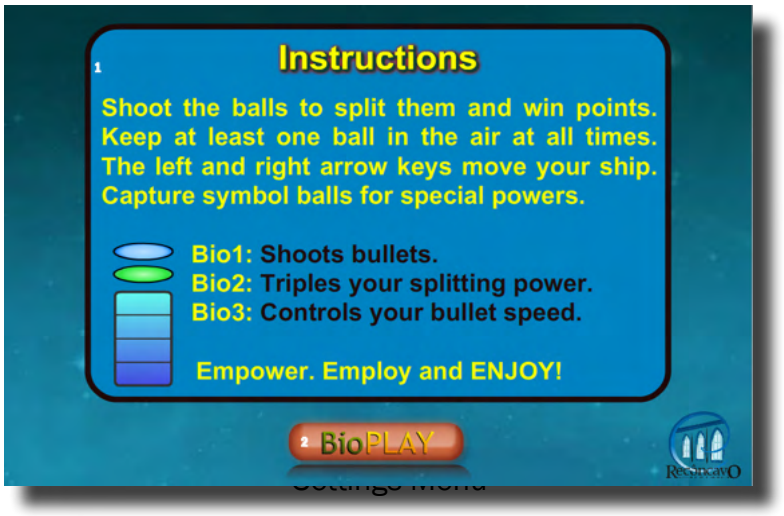
1. **BioPLAY (Start Button)** – Click on the button go launch the Settings menu to assure settings for use.
2. **High Score Button** – Click to see the high scores of all prior players on the current PC.
3. **Settings Button -** Click on this button to change settings without beginning a new game.



Settings Menu

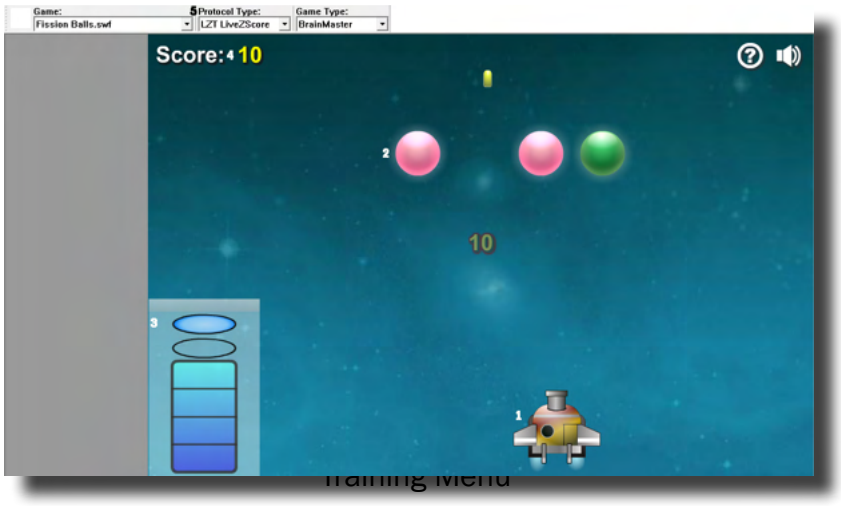
***Please Note:** All Interactive Games Require interaction from the user. Either the mouse or the Keyboard. So, if this will not be possible during the session, please do not use these games

1. **Software Interface** – Set selection to BrainMaster 3.0. This works with all versions of BrainMaster Software
2. **High Score Reset Button** – Click to delete all High Scores
3. **High Score Export.. Button -** Click to export all previously recorded High Scores
4. Active Check Box - Click on if you would like High Scores to be tracked, and un-click if you do not want high scores tracked
5. **Bio3 Smoothing** - Bio3 is a Proportional Control. By adjusting the Smoothing, you can control the speed at which that the data comes in.
6. **OK Button** - Click on to move to the Instruction Menu, or the Title Screen, if the Settings Button was clicked
7. **Cancel Button** - Click on to cancel any selections made and return to the Title Screen.



***Please Note:** All Interactive Games Require interaction from the user. Either the mouse or the Keyboard. So, if this will not be possible during the session, please do not use these games

1. **Software Interface** – Basic instructions for the client.
2. **BioPLAY Button** – Click to begin the Training



Training Menu

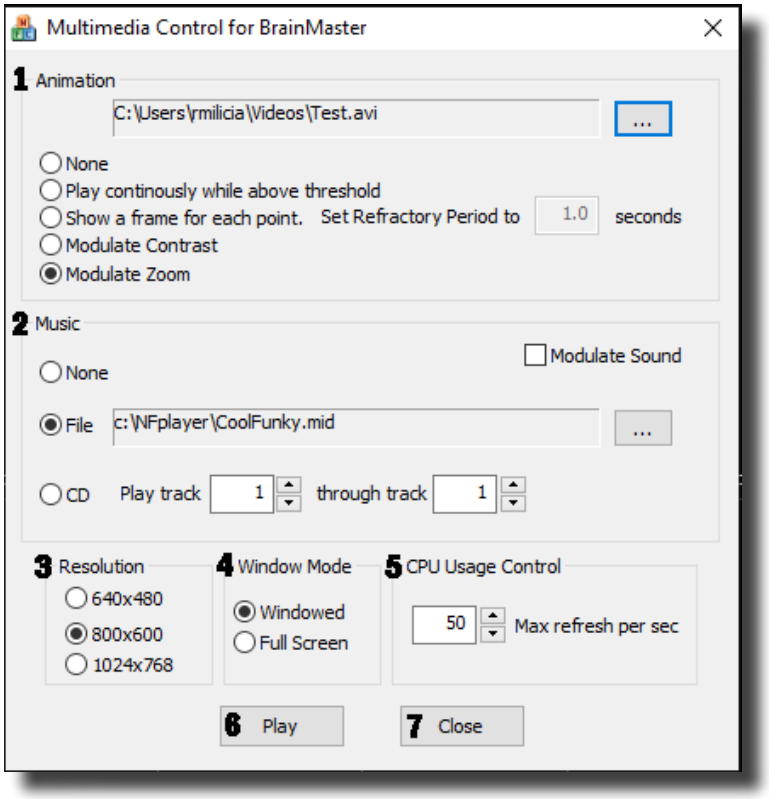
***Please Note:** All Interactive Games Require interaction from the user. Either the mouse or the Keyboard. So, if this will not be possible during the session, please do not use these games

1. **Ship** – The Ship that you pilot to destroy the Balls
2. **Fission Balls** – As they blow up, they split and continue to fall. The game is over when they all fall below the ship
3. **Bio Control Menu** - Shows the current output for the ship
4. **Score** - Shows the current score for their current session
5. **Protocol Type** - This needs to be set properly for proper output. If a Z-Score this must be set to LZT LiveZScore.
6. **Sound Output** - To turn on or off Sound output from the game
7. **? Button** - Click to open the Instructions Menu

Similar Games – Bubble Bug, Crazy Taxi, GhostMan Advanced, Gold Fishing, Hare and Tortoise, Protect Mission, Slingshot Challenge, Space Invaders, Spaceship, Wizard Balls

BMrMultiMediaPlayer Suite

BMrMultiMedia (BMrMMP) Player Control Menu Display

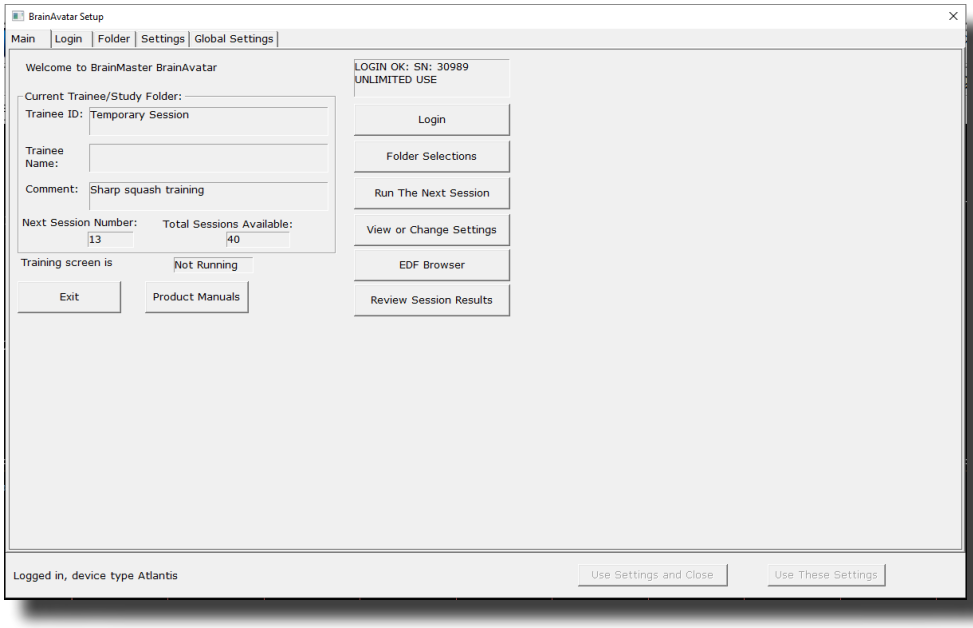


1. **Animation Section** – Section where you can choose what type of animation being viewed, and the type (if any) modulation is occurring. In order to choose a different animation, you can do so by clicking the "..." button.
2. **Music Section** – Section where you can choose what type of music is being played, and whether or not audio modulation will occur. In order to choose a different audio file, you can do so by click the "..." button.
3. **Resolution Section** – Section where you can adjust the resolution the animation file is being displayed.
4. **Window Mode Section** – Section where you can adjust whether the animation is being displayed as a Window, or in Full Screen Mode.
5. **CPU Usage Control** – Section where you can control the Max refresh rate per second.
6. **Play Button** – Click to confirm settings and launch BMr MultiMediaPlayer.
7. **Close Button** – Click to close BMr MultiMediaPlayer Control Menu.

Acceptable Media Files: MPEG, AVI
Acceptable Audio Files: MP3, WAV

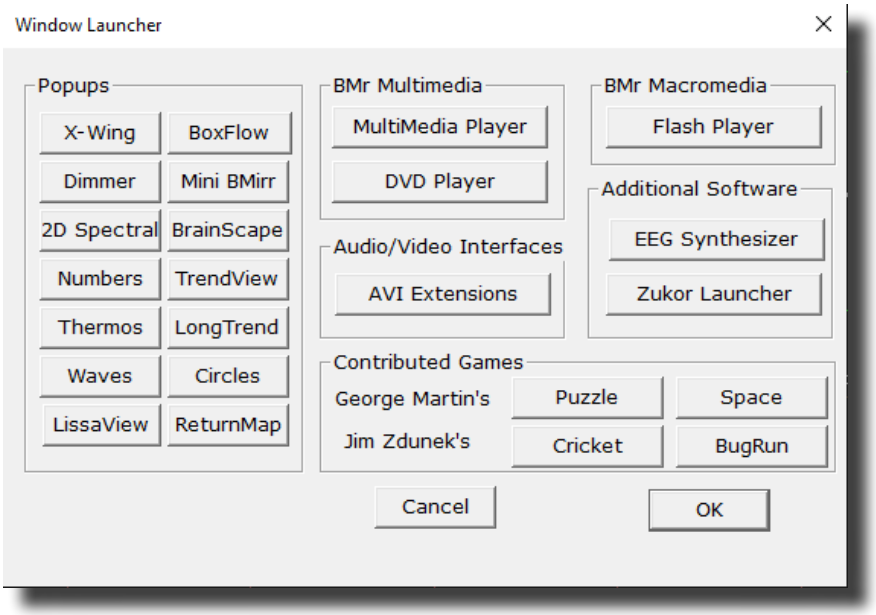
Using BMrMMP

1. Setup the training that you would like to use, or choose an existing folder that you would like to us, and click the “Run The Next Session” Button.

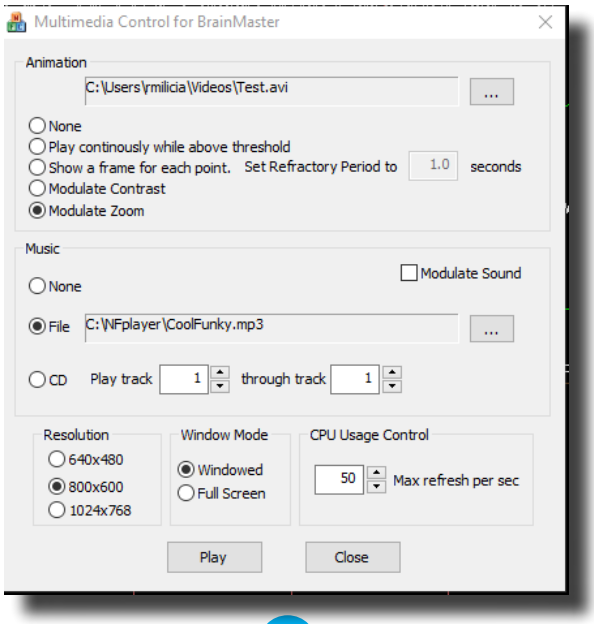


2. After you start the Session, click the “Window” Button.

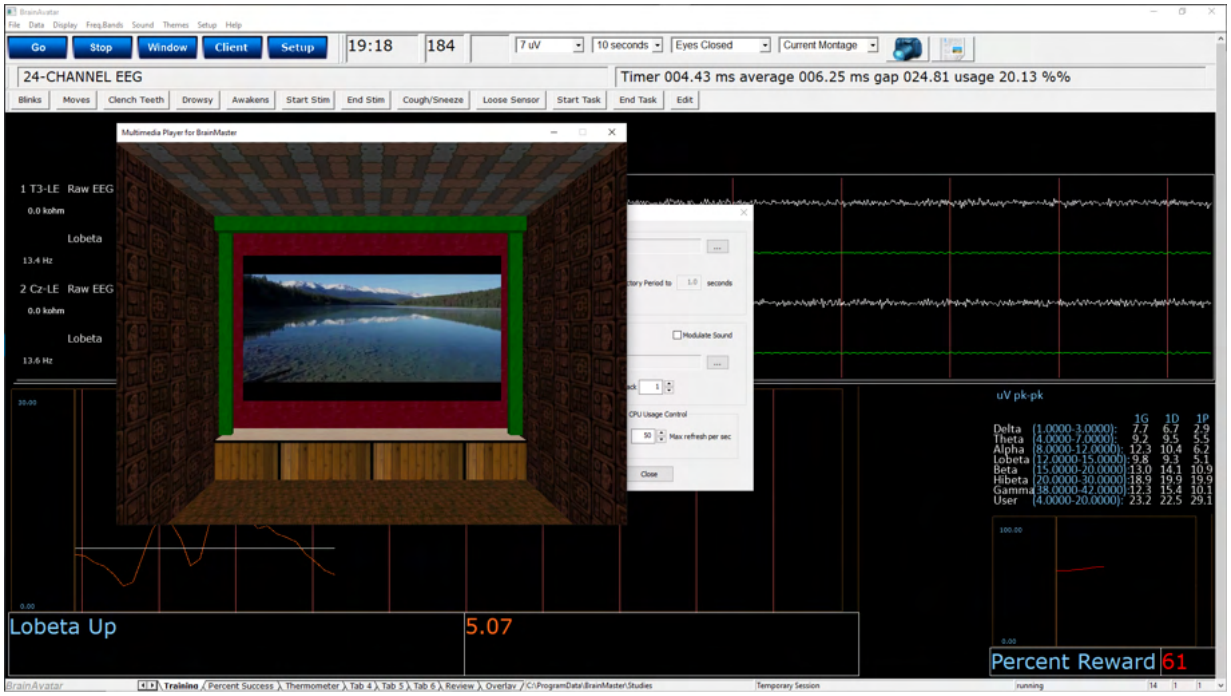
3. In the Window Launcher Menu, click the “MultiMedia Player” Button, located in the BMr Multimedia Section.



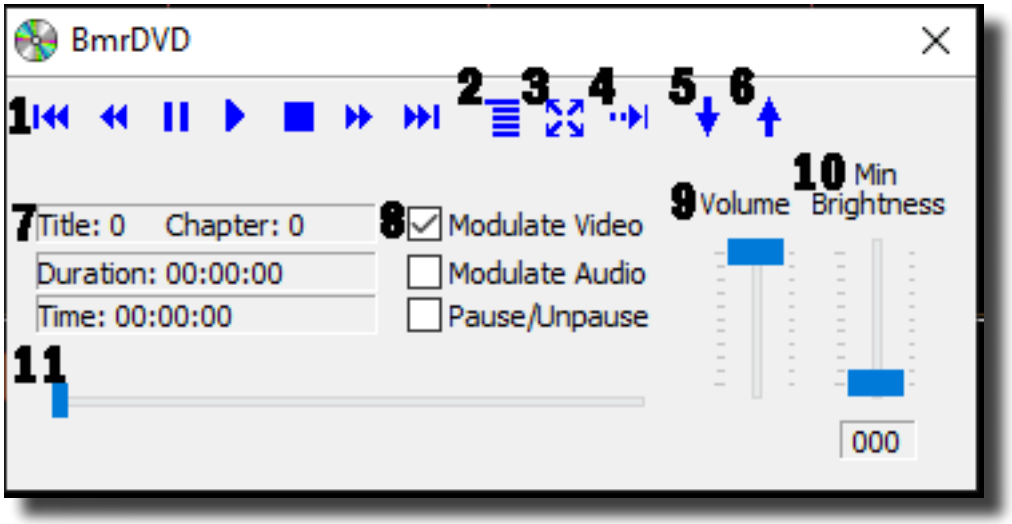
4. Setup the Controls for the BMrMMP as you would like them to react. When your settings are as you would like them, click the “Play” Button to continue.



You have now set up the MultiMedia Player for use with the BrainMaster Software. You will be able to tell this has been successful, as the Multimedia Player for BrainMaster for BrainMaster Window will open, and the chosen Video file will play.



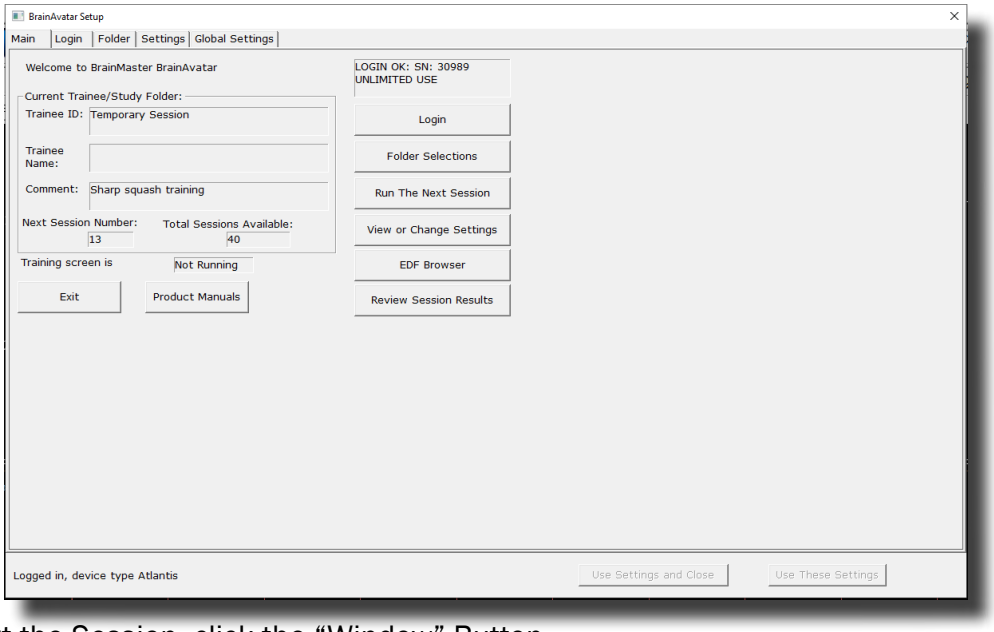
BMrDVD Control Menu Display



1. **DVD Basic Controls –** Basic DVD Controls(Skip Back, Rewind, Pause, Play, Stop, Fast Forward, and Skip Forward).
2. **Root Menu/Resume Button –** Click to switch from to the Main Menu, or back to your original position.
3. **Full Screen Button –** Click to Expand the DVD Window to Full Screen Mode.
4. **Step Forward Button –** Click to step through the different Title Screens.
5. **Save Bookmark Button –** Click to create a Bookmark for the Trainee Folder that you are currently using.
6. **Restore Bookmark Button –** Click to restore a Bookmark for the Trainee Folder that you are currently using (Unsupported Feature).
7. **Disc Information –** Displays the Chapter Information, Duration and Time for the DVD.
8. **Modulate Check Boxes –** Section where you can choose the type of Modulation(if any).
9. **Volume Control –** Controls the Volume for the BMrDVD Program
10. **Min Brightness Control –** Controls how low the software modulates when the client is not meeting criteria.
11. **Scroll Bar –** Use to Scroll through the DVD with-out skipping or fast forwarding.

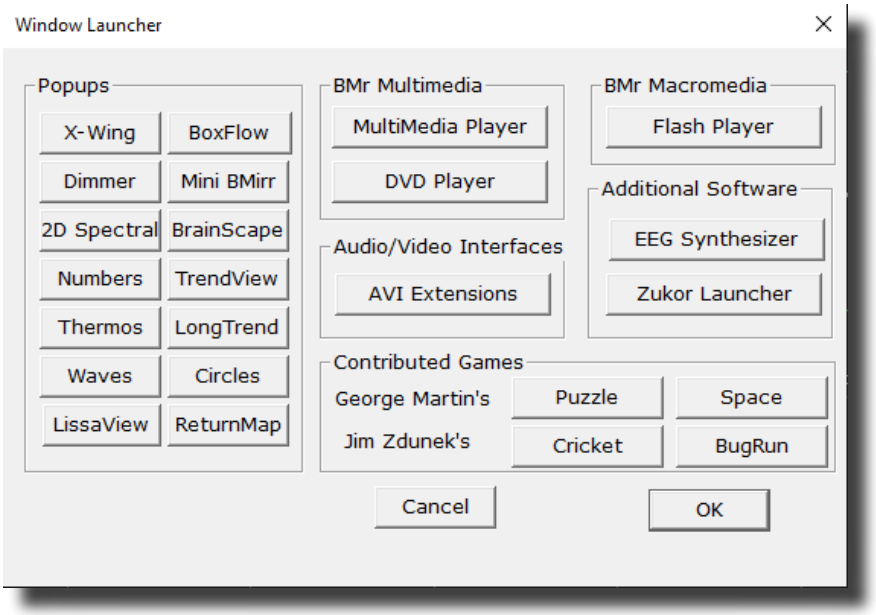
Using BMrDVD

1. Setup the training that you would like to use, or choose an existing folder that you would like to us, and click the “Run The Next Session” Button.

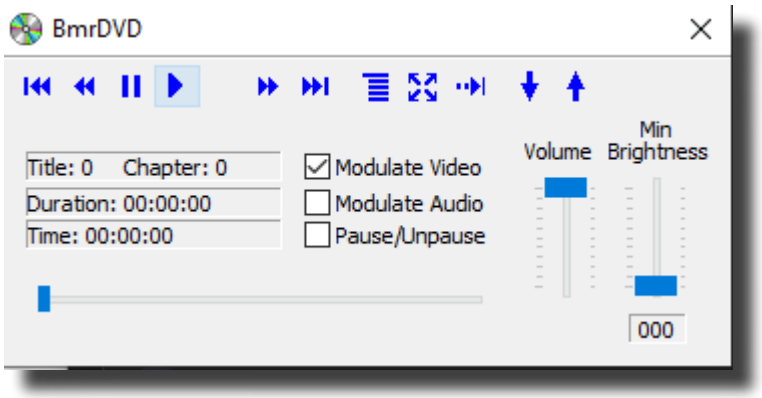


2. After you start the Session, click the “Window” Button.

3. In the Window Launcher Menu, click the “DVD Player” Button, located in the BMr Multimedia Section.

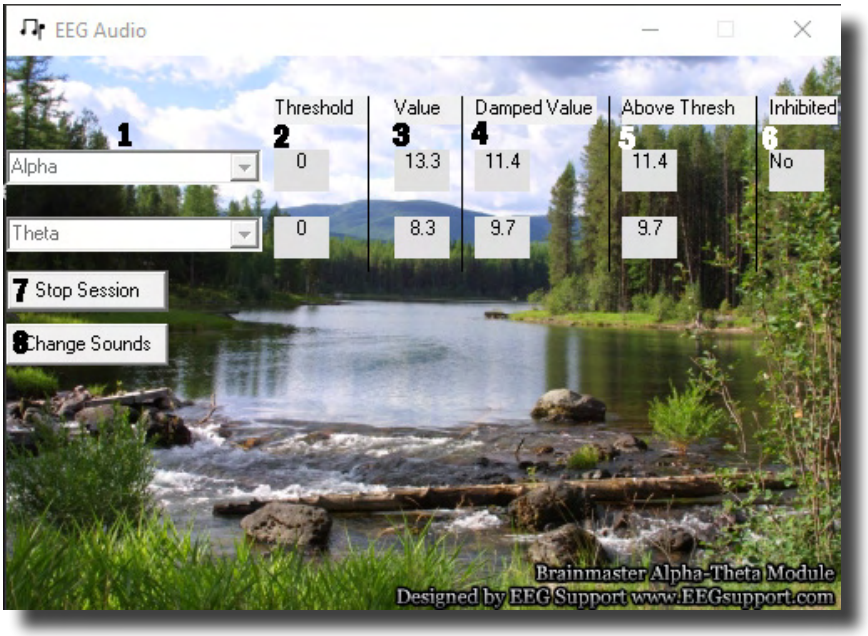


4. Click the “Play” Button or the “Restore Playback” Button to continue.



You have now set up the DVD Player for use with the BrainMaster Software. You will be able to tell this has been successful, as the BmrDVD Video Window will open, and the DVD will play.

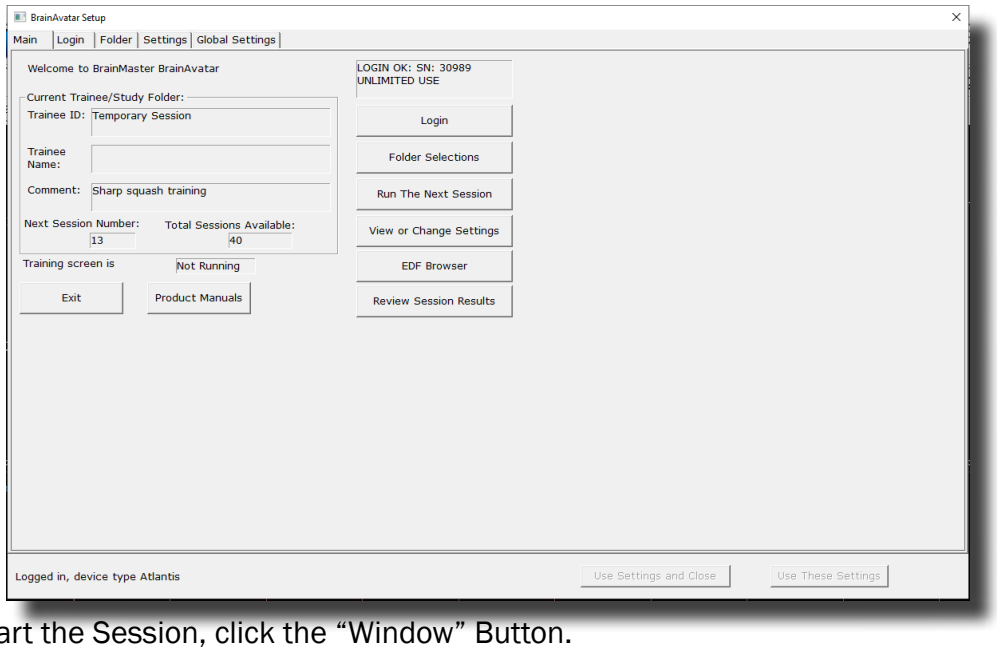
EEGAudio Control Menu Display



1. **Band Drop-Down Boxes –** Drop-Boxes, where you can choose which bands you would like use for the training. ***PLEASE NOTE:** EEGAudio is typically used for Alpha/Theta Training, but is versatile enough to be used with any type of protocol that includes two enhance("Go") components, in which it is desirable to inform the trainee of their relative size, as well as when either of the goes above threshold.
2. **Threshold Boxes –** Display boxes that show the current Threshold values for the bands chosen from the Band Drop-Down Boxes.
3. **Value Boxes –** Display boxes that show the current value for the bands chosen from the Band Drop-Down Boxes.
4. **Damped Value Boxes –** Display boxes that show the damped(averaged) value for the bands chosen from the Band Drop-Down Boxes.
5. **Above Thresh. Boxes –** Display boxes that show the value that shows the amount that the component is currently above threshold(negative if below) for the bands chosen from the Band Drop-Down Boxes.
6. **Inhibited Box –** Displays whether or not any inhibits are active.
7. **Start/Stop Session Button –** Click when all settings are proper to run the EEGAudio Program.
8. **Change Sounds Button –** Click to change the sounds that are coming in for each band, as well as the background for each band.

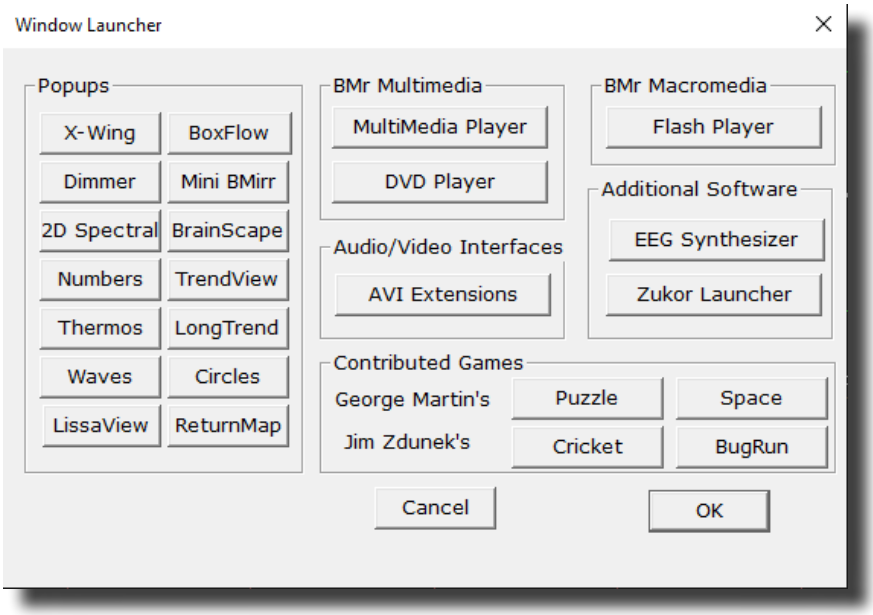
Using EEGAudio

1. Setup the training that you would like to use, or choose an existing folder that you would like to us, and click the “Run The Next Session” Button.

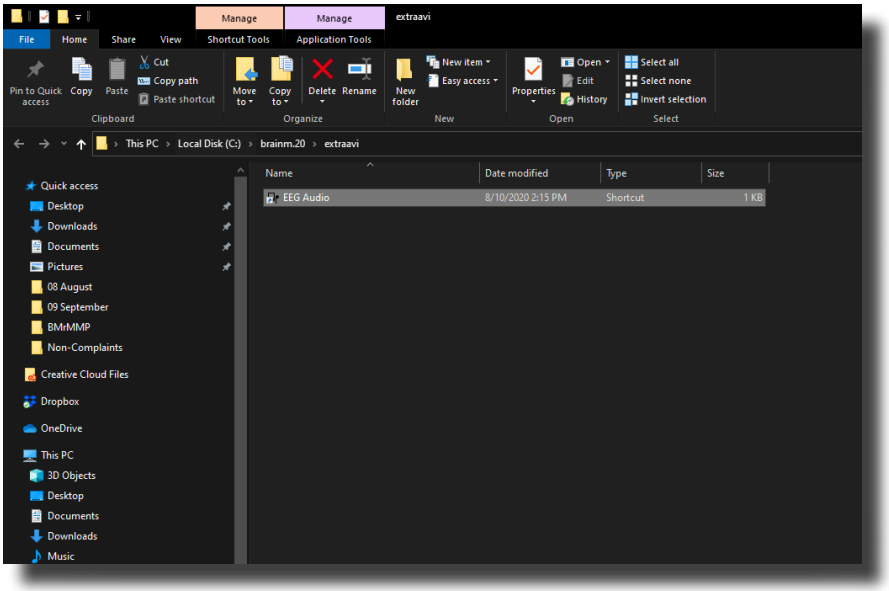


2. After you start the Session, click the “Window” Button.

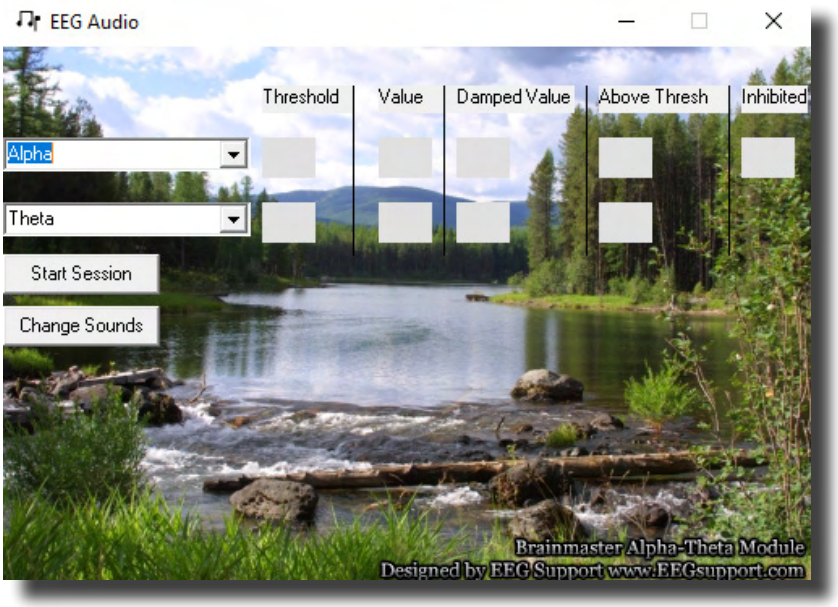
3. In the Window Launcher Menu, click the “AVI Extensions” Button, located in the Audio/Video Interfaces Section.



4. The following menu will open. Double-Click “EEGAudio.exe” to open the EEGAudio program.

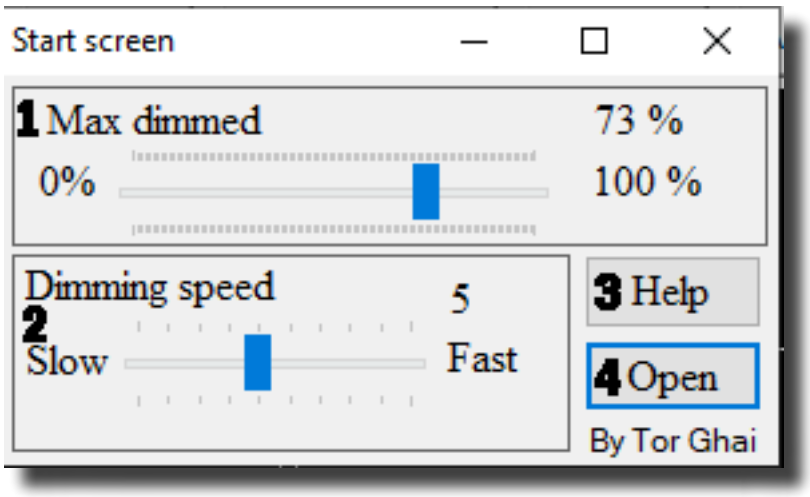


5. Setup the sounds and bands as you would like them. When the set-up is complete, click the Start Session Button.



You have now set up the EEGAudio for use with the BrainMaster Software. You will be able to tell this has been successful, as EEGAudio will be having numbers, and you have chosen will be playing as the requirements are met.

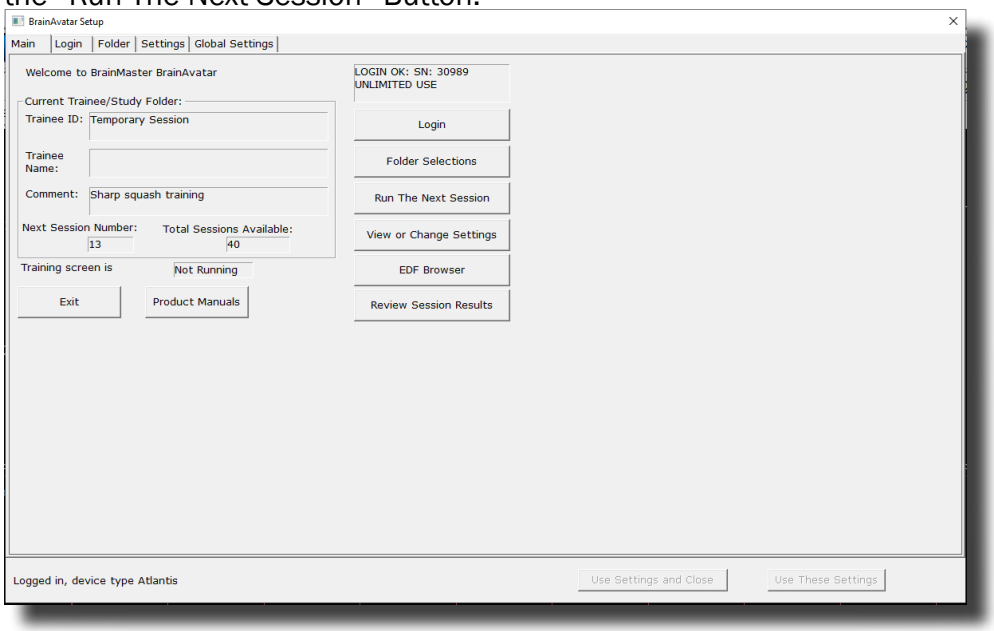
Dimmer Control Menu



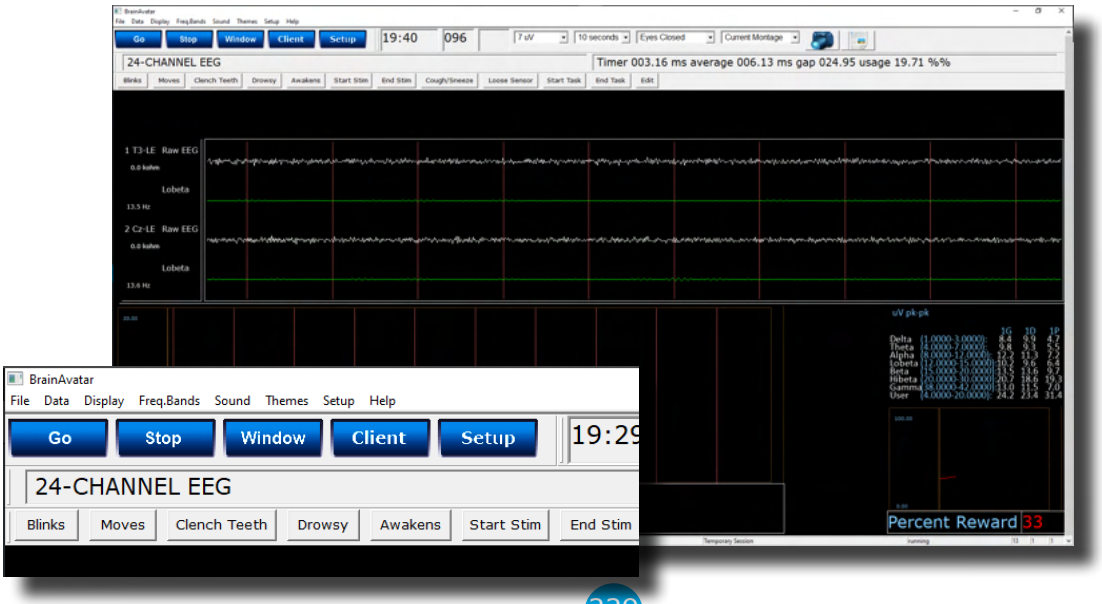
1. **Maxed Dimmed Section –** Section where you can set the percentage that the Dimmer Window will dim.
2. **Dimming Speed Section –** Section where you can set the speed that the Dimmer Window will dim.
3. **Help Button –** Opens simple Help instructions for the Dimmer.
4. **Open Button –** Click to open the Dimmer Window.

Using Dimmer

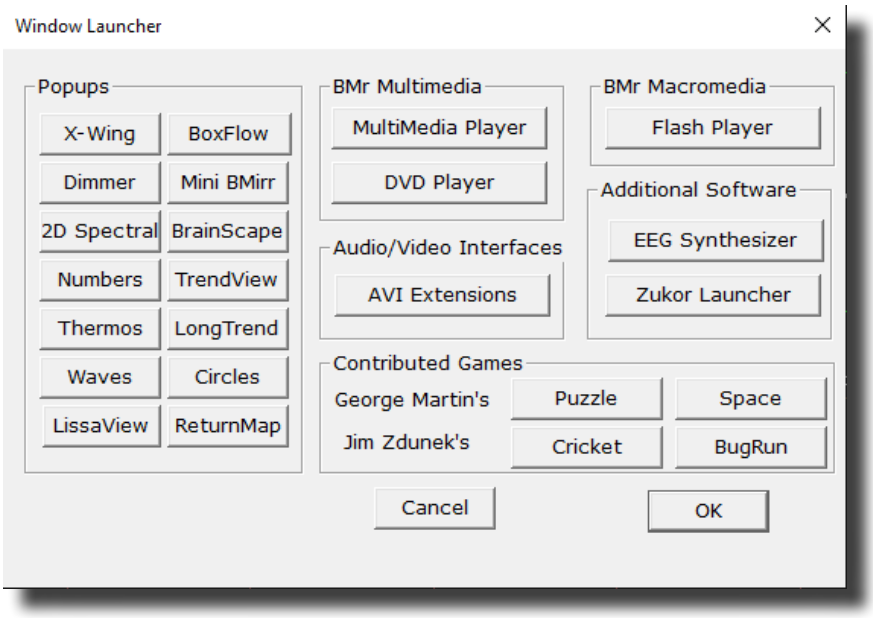
1. Setup the training that you would like to use, or choose an existing folder that you would like to us, and click the “Run The Next Session” Button.



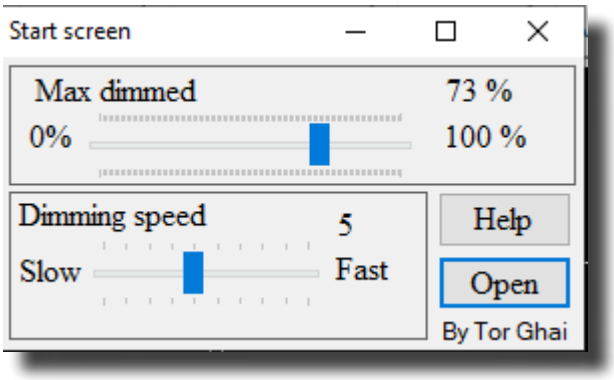
2. After you start the Session, click the “Window” Button.



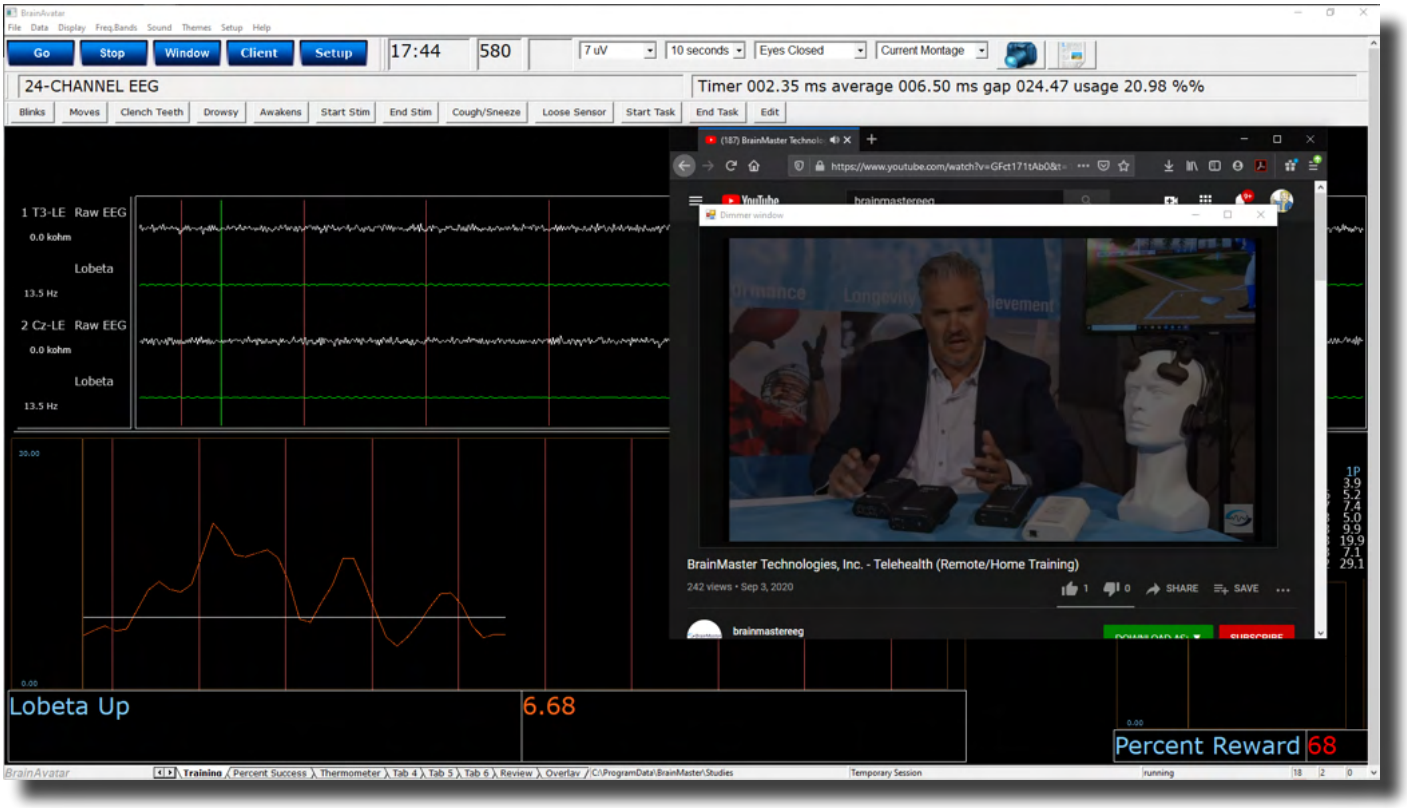
3. In the Window Launcher Menu, click the Dimmer Button located in the Popups Section.



4. Setup the settings as you would like them. When the set-up is complete, click the Open Button



You have now set up the Dimmer for use with the BrainAvatar Software. You will be able to tell this has been successful, as the Dimmer Window will be modulating from see through, to not see through, based on whether the training is being met. At this point, you may move the Dimmer Window on top of whatever Application you would like to be Dimmed. ***PLEASE NOTE: The Dimmer Window sits on top of the Application. This means that this will not function with applications that require Mouse Clickthrough. It can function with Keyboard functionalities. So, long as the Application has Application Focus. This requires you to position in a way that you can make the Application the Main Window.

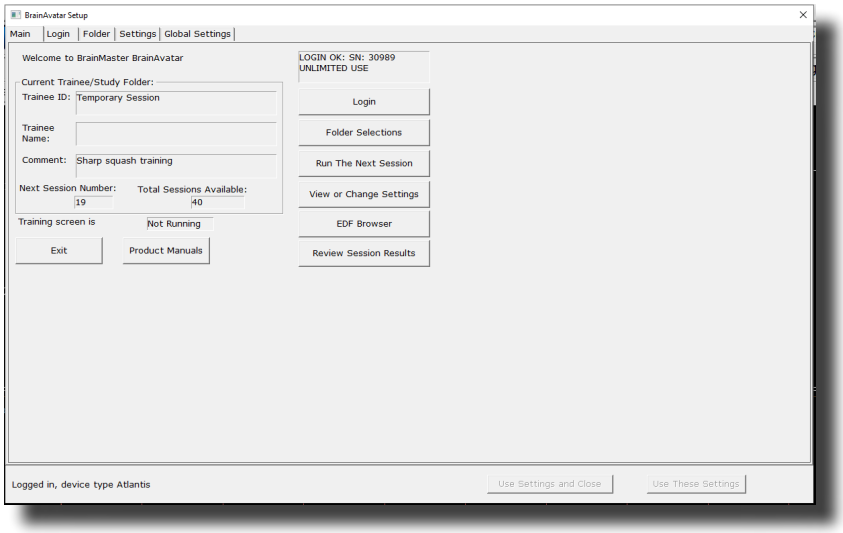


Z-Score Training

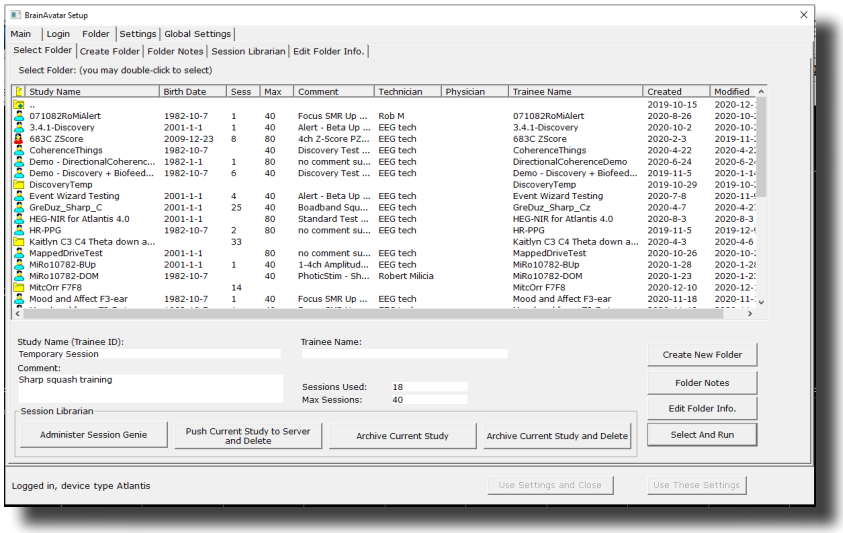
Activating ANI Z-Score Training DLL

***PLEASE NOTE:** These steps only need to be followed when using the ANI Z-Score Training DLL. This is not required for any other Z-Score Training DLL. ANI Z-Score DLL can only be activated on 2 Computer Systems. Please be sure before activating, that you are doing this on the system that you want this to be on

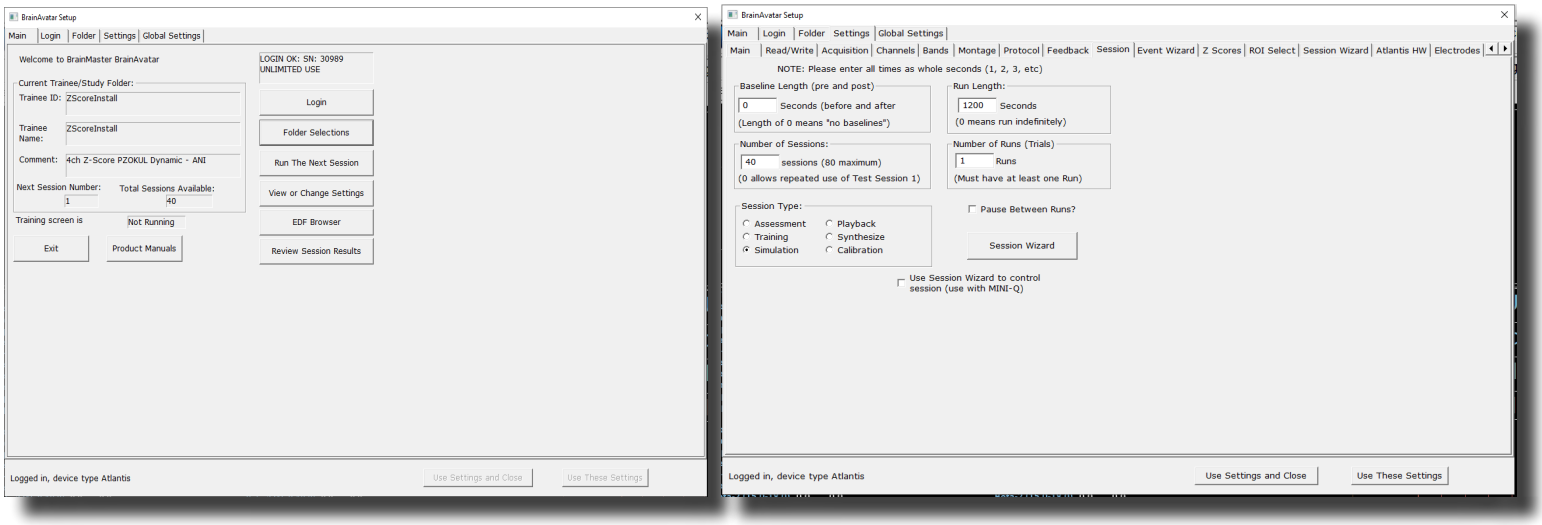
1. From the Setup/Home Screen, click the Folder Selections Button



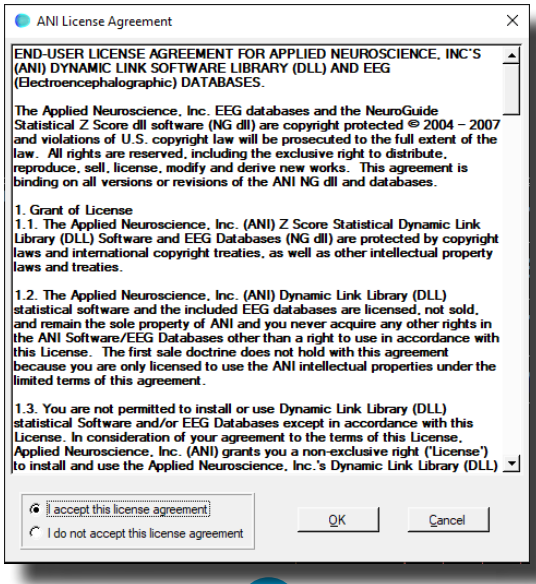
2. From the Select Trainee/Study Folder Menu, click the Create New Folder Button



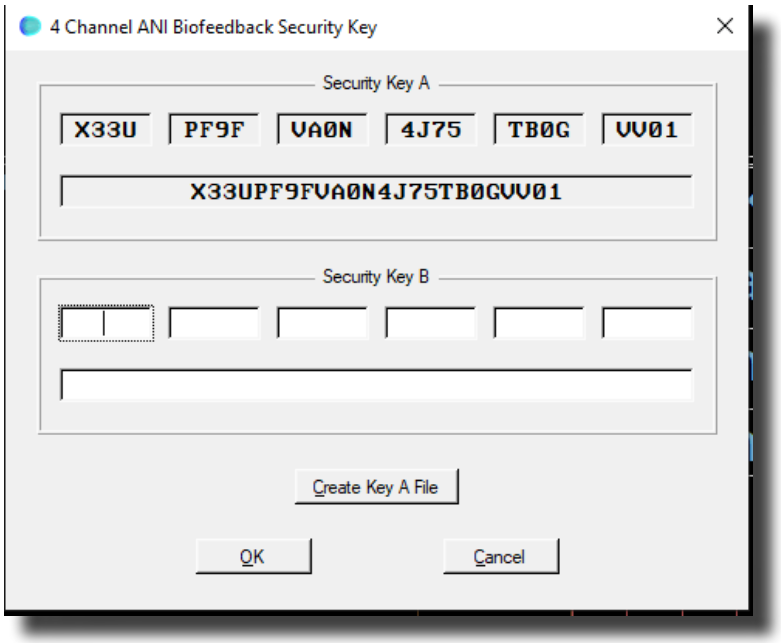
3. Create a folder named ZscoreInstall that contains a Z-Score protocol. After the folder is created, click View or Change Settings Button. On the Setup Options Menu, click the Session Control Button. On the Session Control Menu, make sure that the Session Type is set to Simulation. Once this is complete, click Use These Settings and Close on the Setup Options Menu, and click the Run The Next Session Button



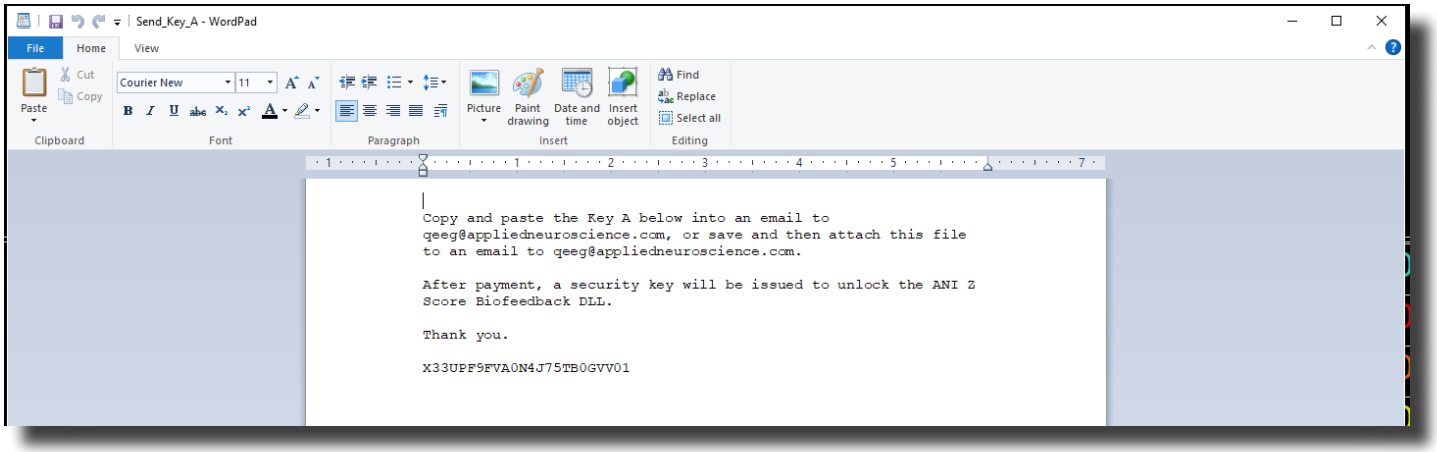
4. When the following screen appears, click I accept the license agreement option, and click OK to continue



5. When the following screen appears, click the Create Key A File Button. This will create a text document

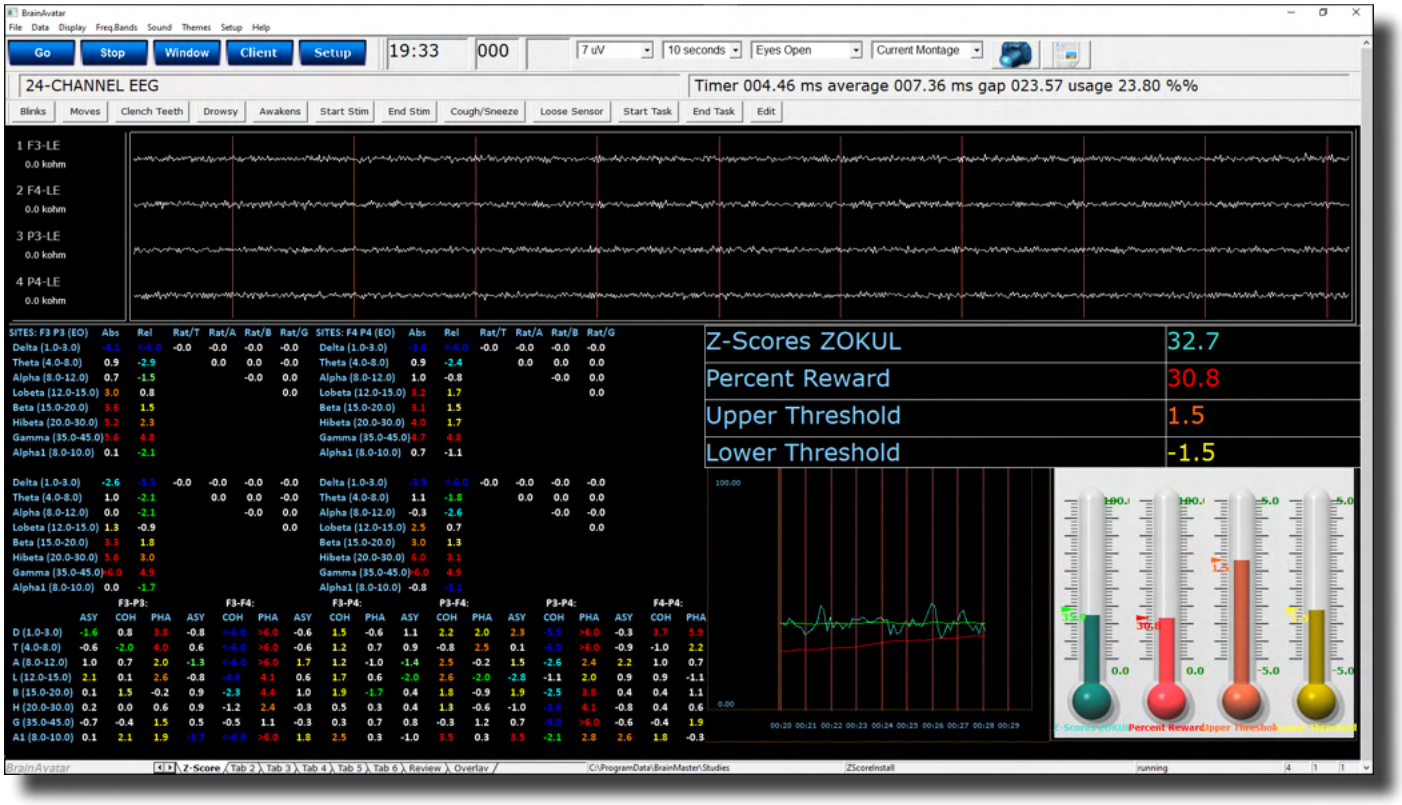


6. Save the document to the folder that was created named BrainMasterInstalls. E-Mail the document to qeeg@appliedneuroscience.com. Once the Key-B is created, it will be E-Mailed to you. In order to put the Key-B into the system, you will need to run another session with the folder created, and follow steps 4 and 5 once again.

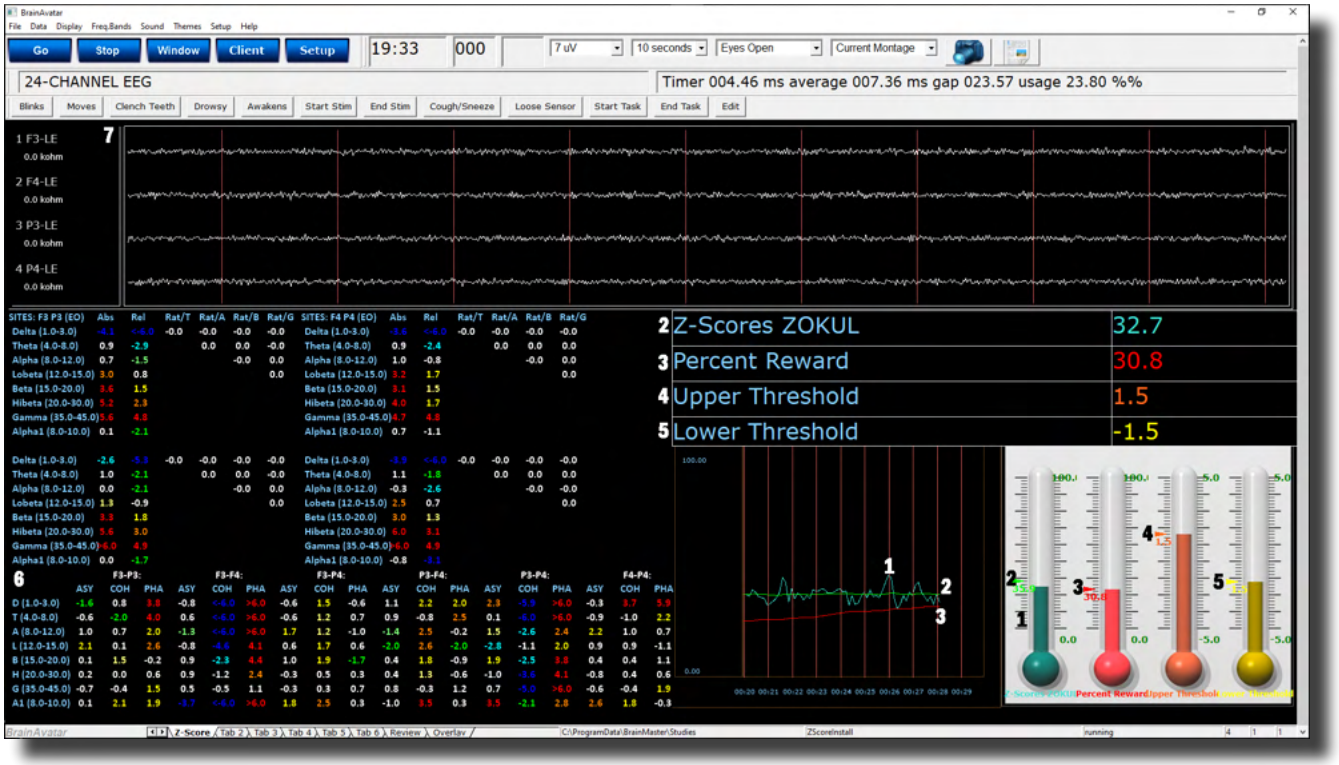


Z-Score Training

The ANI Z-Score Training DLL will now be installed onto this PC for use. You will be able to tell that this is accomplished



Single Tab Design - Z-Score Using PercentZOK or PZOKUL



1. **Z-ScorePZOK/PZOKUL (Teal Line & Teal Thermometer) –** This line and thermometer is the Percent of Z-Scores with-in the defined range
2. **Z-Score Threshold (Green Line & Green Marker on Thermometer) –** This line is the threshold for the Z-Scores. When the Z-Scores are below the threshold, the system will reward the client with the chosen reward. This can either be controlled by the "C" key or Dynamically (On its own).
3. **Percent of Reward (Red Line & Red Thermometer) –** This line and thermometer shows the percent time that the Z-Scores are greater than the Z-Score threshold.
4. **Z-Score Range Definer or Z-Score Upper Range (Orange Line & Orange Thermometer) –** This line defines the range of Z-Scores that you are training. This is controlled by the "U" key, or by dragging the orange marker on the Thermometer. If this is a PZOKUL Protocol, this line defines the upper range of the Z-Score Range.
5. **Z-Score Lower Range (Yellow Line & Yellow Thermometer) –** This line is only available in PZOKUL protocols and defines the lower range of Z-Score Range. This is controlled by the "L" key, or by dragging the yellow marker on the Thermometer.
6. **Z-Score Text Stats -** This gives the moving average values of the Z-Scores for a particular metric.
7. **Acquired EEG -** This will show the EEG and relevant information to the EEG

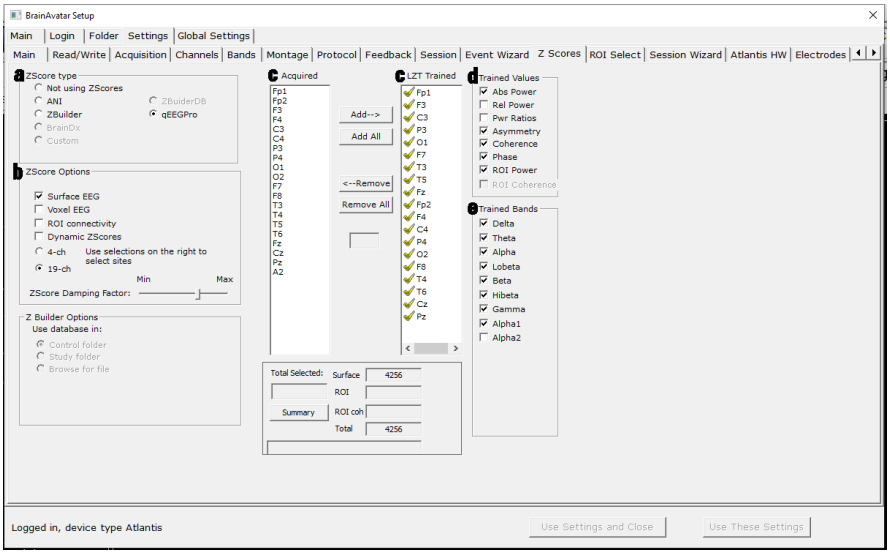
Z-Score Training

Multi-Tab Design - Z-Score Using PercentZOK or PZOKUL

1. **Z-ScorePZOK/PZOKUL (Teal Line & Teal Thermometer) –** This line and thermometer is the Percent of Z-Scores with-in the defined range
2. **Z-Score Threshold (Green Line & Green Marker on Thermometer) –** This line is the threshold for the Z-Scores. When the Z-Scores are below the threshold, the system will reward the client with the chosen reward. This can either be controlled by the "C" key or Dynamically (On its own).
3. **Percent of Reward (Red Line & Red Thermometer) –** This line and thermometer shows the percent time that the Z-Scores are greater than the Z-Score threshold.
4. **Z-Score Range Definer or Z-Score Upper Range (Orange Line & Orange Thermometer) –** This line defines the range of Z-Scores that you are training. This is controlled by the "U" key, or by dragging the orange marker on the Thermometer. If this is a PZOKUL Protocol, this line defines the upper range of the Z-Score Range.
5. **Z-Score Lower Range (Yellow Line & Yellow Thermometer) –** This line is only available in PZOKUL protocols and defines the lower range of Z-Score Range. This is controlled by the "L" key, or by dragging the yellow marker on the Thermometer.
6. **Z-Score Text Stats -** This gives the moving average values of the Z-Scores for a particular metric found on another tab.
7. **Acquired EEG -** This will show the EEG and relevant information to the EEG found on another tab.

Changing Surface Sites

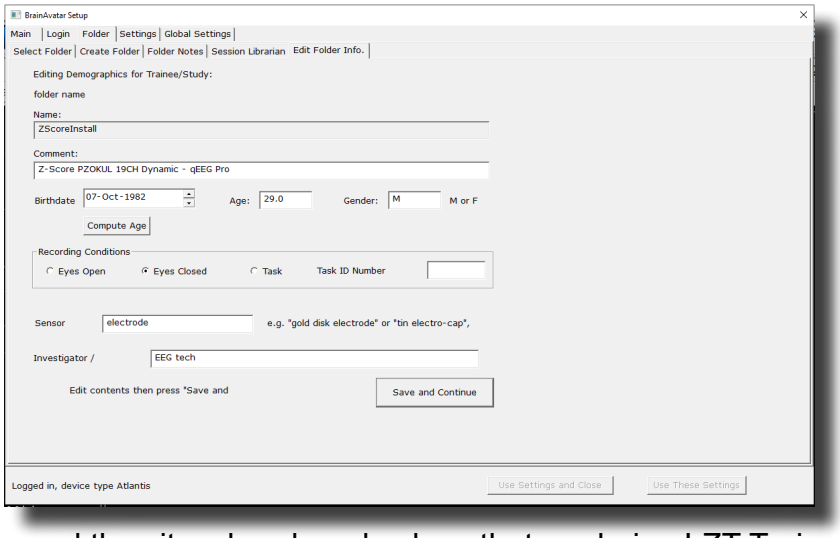
1. From the Setup Menu, click Settings Tab, then click the Z-Scores Tab. Here, you can control:



   a. **Z-Score Type –** Here, is where you can choose the type of Z-Score Training.
   b. **Z-Score Options** – Here is where you can choose between 4 Channel Z-Score Method, and Up to 19 Channel Z-Score Method, VoxelZ-Score Method (BrainDX or qEEGPro), or ROI Connectivity (qEEGPro Only). If 4 Ch or 19 Ch is chosen, you will use this tab set what sites, values and bands to train.
   c. **Acquired & LZT Trained Sections –** As you choose sites that are being acquired from the Acquisition Tab, they will populate in the Acquired Section. From here, you can place them into the LZT Trained section. You can do this for each individual site by highlighting the location, and clicking the Add→ Button. If you would like to add all electrodes, then click the Add All Button. ***PLEASE NOTE:** If you change which sites are being acquired after you have set what is to be LZT, you will have to adjust the LZT Trained Z-Scores. The same controls apply if removing a site or sites to be LZT Trained.
   d. **Trained Values Section –** Here you can choose which trained values will be used for the LZT Training. You can check on or off any of the values. This will affect the total amount of Z-Scores being trained.
   e. **Trained Bands Section –** Here you can choose which trained bands will be used for the LZT Training. You can check on or off any of the values. This will affect the total amount of Z-Scores being trained.

When all settings are as you would like them, confirm the changes.

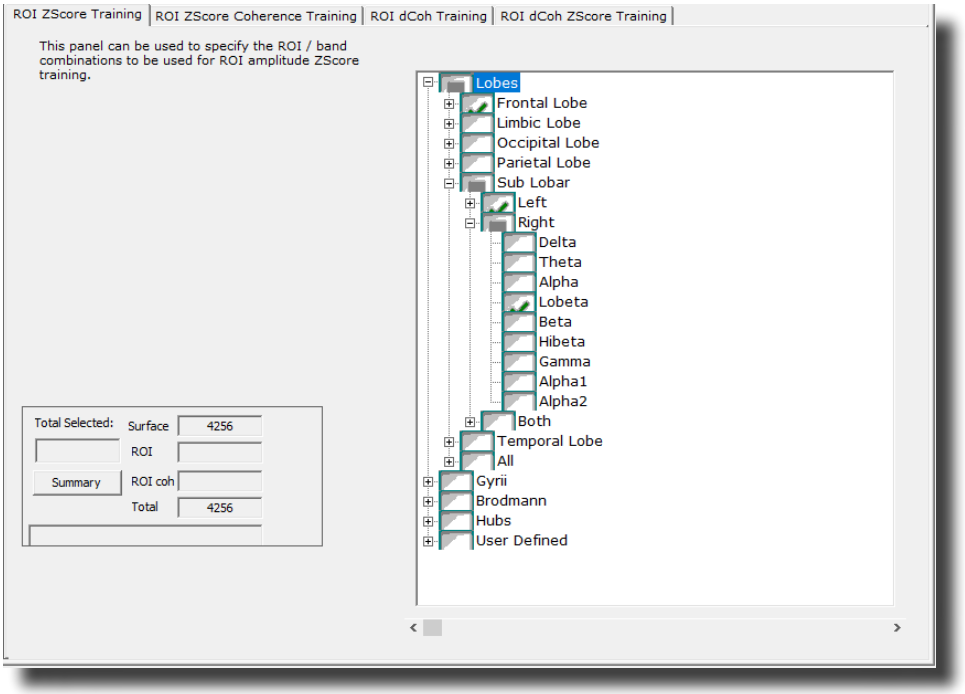
2. If you would like to change other settings (Age/eye condition), this can be done in the Edit Folder Info Tab. From the Setup Menu, click the Folder Tab, and click the Edit Folder Info Tab. Here, you will be able to change these things. When completed, confirm the changes.



You have now changed the sites, band, and values that are being LZT Trained. You will be able to tell this has happened, on the Training/Control Screen, the Z-Score Text Displays will match the selections that you chose.

Changing ROI Sites

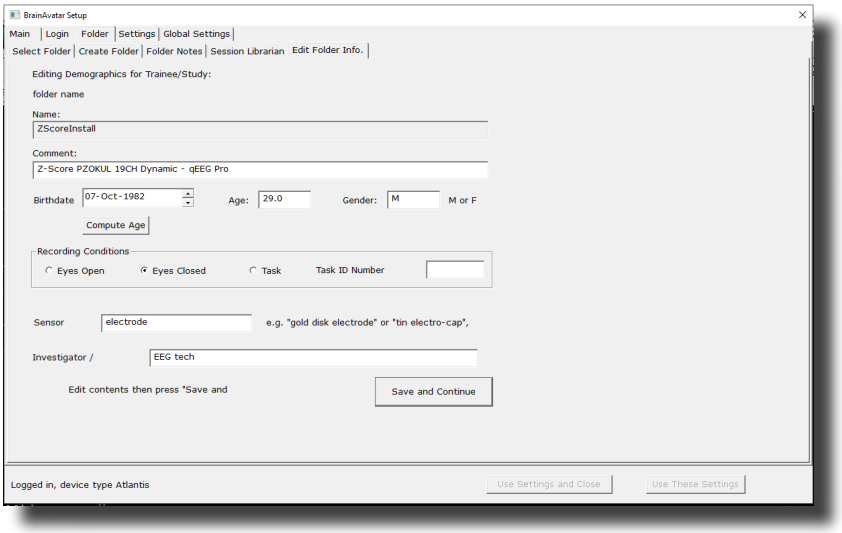
1. From the Setup Menu, click Settings Tab, then click the ROI Select Tab, here you can:



   a. **ROI Definition Architecture –** Here, you can use the Check Mark system to select the areas that you would like to train. The more specific of training you would like. The more you will need to click the + next to the Checkbox to make more specific. As you make the selections more specific, the Checkbox will turn to a “Gray Square” to show that changes are not to all below.

When all settings are as you would like them, confirm the changes.

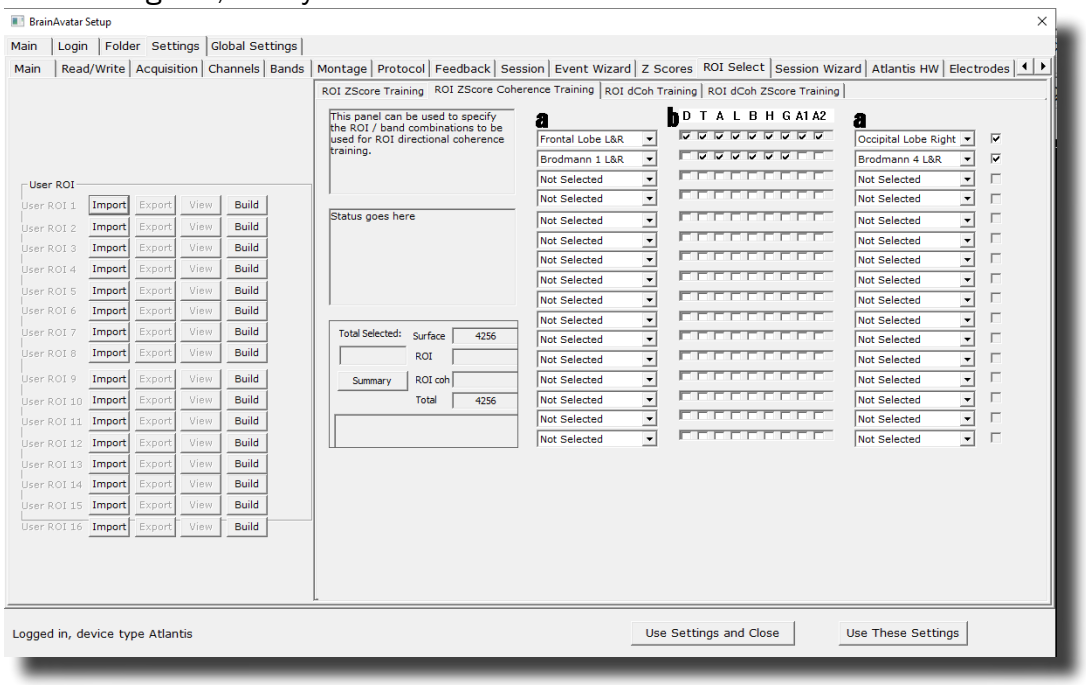
2. If you would like to change other settings (Age/eye condition), this can be done in the Edit Folder Info Tab. From the Setup Menu, click the Folder Tab, and click the Edit Folder Info Tab. Here, you will be able to change these things. When completed, confirm the changes.



You have now changed the ROI's and bands that are being LZT Trained. You will be able to tell this has happened, on the Training/Control Screen, the Z-Score Text Displays will match the selections that you chose.

Changing ROI Coherence Training

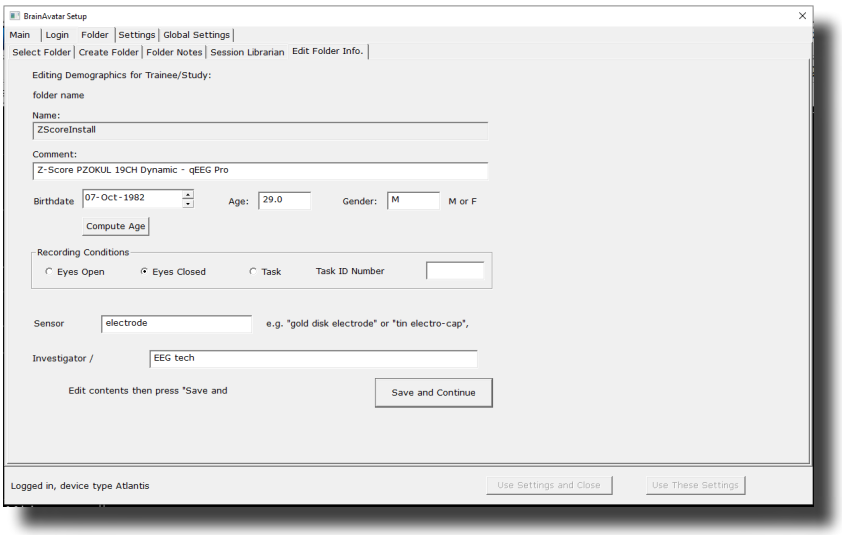
1. From the Setup Menu, click Settings Tab, then click the ROI Select Tab, then click the ROI ZScore Coherence Training Tab, here you can:



   a. **ROI Select Architecture –** Here, you will choose the ROI Combinations for training by using the Check Mark system to select the areas that you would like to train. The more specific of training you would like. The more you will need to click the + next to the Checkbox to make more specific.
   b. **Band Checkboxes -** Here, you will choose the bands that you would like to be trained for the Coherence of the ROI Combintation.

When all settings are as you would like them, confirm the changes.

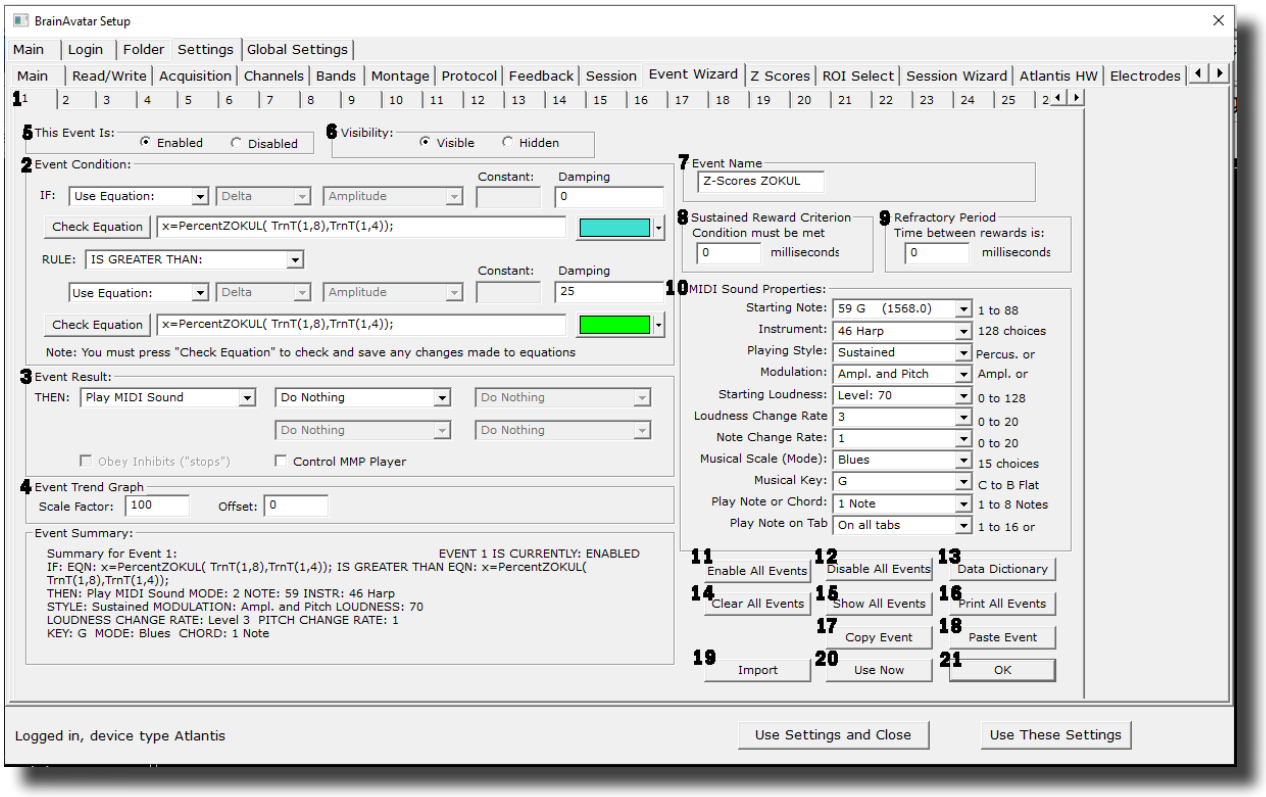
2. If you would like to change other settings (Age/eye condition), this can be done in the Edit Folder Info Tab. From the Setup Menu, click the Folder Tab, and click the Edit Folder Info Tab. Here, you will be able to change these things. When completed, confirm the changes.



You have now changed the ROI's and bands that are being LZT Trained. You will be able to tell this has happened, on the Training/Control Screen, the Z-Score Text Displays will match the selections that you chose.

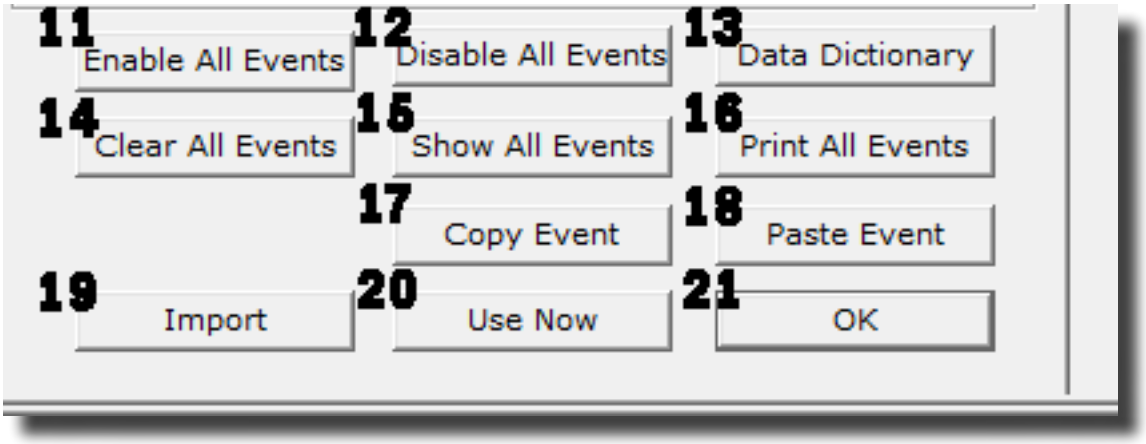
Event Wizard

Event Wizard Control Menu Display



1. **Event Number Section –** Section where you choose which Event you are viewing.
2. **Event Condition Section –** Section where you set the chosen Event Condition for operation.
3. **Event Result Section –** Section where you set what the chosen Event does when the Event Condition has been met.
4. **Event Trend Graph Section –** Section where you set the size for the Graph.
5. **This Event Is: Section –** Section where you set whether the chosen Event is enabled or not.
6. **Visibilty Section –** Section where you set whether the chosen Event Graph will be visible or not, when the Trend Graphs are chosen for display.
7. **Event Name Section –** Section where you can create a name for display in the text stats or thermometer.
8. **Sustained Reward Criterion Section –** Section where you set how long the chosen Event Condition must be met to produce the selected Event Result.
9. **Refractory Period Section –** Section where you set how long for a time before another reward is possible for the chosen event.
10. **MIDI Sound Properties Section –** Section where you can set the properties for MIDI reward feedback for the chosen Event.

Event Wizard Control Menu Display (Continued)



11. **Enable All Events Button –** Click to enable all events.
12. **Disable All Events Button –** Click to Disable all events.
13. **Data Dictionary Button –** Click to launch the Data Dictionary.
14. **Clear All Events Button –** Click to clear the data from all events.
15. **Show All Events Button –** Click to show the Event Summary information for all events.
16. **Print All Events Button -** Click to print out the Event Summary information for all events **Currently Unsupported**
17. **Copy Event Button –** Click to copy the chosen Event.
18. **Paste Event Button –** Click to paste an Event that has been selected from the Copy Event Button.
19. **Import Button –** Click to import the Event Wizard File from a previously created folder.
20. **Use Now Button –** Click to apply all changes.
21. **OK Button –** Click to Exit the Event Wizard.

Data Dictionary

Standard variables computed in real time using BrainMaster built-in filter for up to 4 Channel Training (AKA Legacy Variables)	
D, T, A, L, B, H, G, U	channel 1 amplitude (from digital filters) for 8 components
DELTA, THETA, ALPHA, LOBETA, BETA, HIBETA, GAMMA, USER	channel 1 amplitude (from digital filters) for 8 components
DTHR, TTHR, ATHR, LTHR, BTHR, HTHR, GTHR, UTHR	channel 1 thresholds (from digital filters built-in autothresholder)
DX, TX, AX, LX, BX, HX, GX, UX	channel X amplitude (from digital filters) for 8 components
DELTAX, THETAX, ALPHAX, LOBETAX, BETAX, HIBETAX, GAMMAX, USERX	channel X amplitude (from digital filters) for 8 components
CXDA, CXTA, CXAA, CXLA, CXBA, CXHA, CXGA, CXUA	channel X amplitude (from digital filters) for 8 components
CXDF, CXTF, CXAF, CXLF, CXBF, CXHF, CXGF, CXUF	channel X modal frequency (from FFT) for 8 components
CXDE, CXTE, CXAE, CXLE, CXBE, CXHE, C1GE, C1UE	channel X percent energy (from FFT) for 8 components
CXDP, CXTP, CXAP, CXLP, CXBP, CXHP, CXGP, CXUP	channel X percent time over threshold (using digital filters)
CXDT, CXTT, CXAT, CXLT, CXBT, CXHT, CXGT, CXUT	channel X thresholds (from digital filters built-in autothresholder)
CXDV, CXTV, CXAV, CXLV, CXBV, CXHV, CXGV, CXUV	channel X variability (from digital filters)
Standard functions computed in real time using BrainMaster built-in filter for up to 24 Channel Training	
TrnAmplitude(X, Y) or TrnA(X, Y)	Channel X amplitude for the Y band
TrnThreshold(X, Y) or TrnT(X, Y)	Channel X Threshold for the Y band
TrnModalFreq(X, Y) or TrnF(X, Y)	Channel X Modal Frequency for the Y band
TrnPercentTime(X, Y) or TrnP(X, Y)	Channel X percent time over threshold for the Y band
TrnVariability(X, Y) or TrnV(X, Y)	Channel X variability for the Y band
Standard functions for Acquired EEG	
Acquired(x)	Returns the instantaneous acquired signal in micro-volts. The channels number is in the order that the software is acquired (ie: Acquired(1.0) is always Fp1, Acquired(2.0) is always F3).

Standard variables for difference channel (not yet implemented)	
DS, TS,...DELTAS, THETAS,...CSDA, CSTA,...CSGV, CSUV	The sum of channels 1 and 2 is always computed and available. Sum Channel repeats all channel1 variables shown above, with "1" replaced by "S"
DD, TD,...DELTAD, THETAD,...CDDA, CDTA,...CDGV, CDUV	The difference of channels 1 and 2 is always computed and available. Difference Channel repeats all channel1 variables shown above, with "1" replaced by "D"
Cross-channel standard variables for up to 4 Channel Training (AKA Legacy Variables)	
Note: use first channel to designate the pair (X=channels X/X+1)	
CT	Coherence Threshold currently in use in built-in coherence processor. This will automatically track any changes in the coherence threshold.
DCOH, TCOH, ACOH, LCOH, BCOH, HCOH, GCOH, UCOH	Coherence (currently selected type) between channels 1 and 2
CXDC, CXTC, CXAC, CXLC, CXBC, CXHC, CXGC, CXUC	Coherence (currently selected type) between channels X and X + 1
DPCOH, TPCOH, APCOH, LPCOH, BPCOH, HPCOH,GPCOH, UPCOH	"Pure" coherence between channels 1 and 2
DTCOH, TTCOH, ATCOH, LTCOH, BTCOH, HTCOH, GTCOH, UTCOH	Similarity ("Training Coherence") between channels 1 and 2
DSIM, TSIM, ASIM, LSIM, BSIM, HSIM, GSIM, USIM	Similarity ("Training Coherence") between channels 1 and 2
DCOR, TCOR, ACOR, LCOR, BCOR, HCOR, GCOR, UCOR	"Spectral Correlation Coefficient" (SCC) between channels 1 and 2
DCOM, TCOM, ACOM, LCOM, BCOM, HCOM, GCOM, UCOM	Comodulation (Sterman/Kaiser "SKIL" type) between channels 1 and 2
DPHASE, TPHASE, APHASE, LPHASE, BPHASE, HPHASE, GPHASE, UPHASE	Phase between channels 1 and 2
CXDH, CXTH, CXAH, CXLH, CXBH, CXHH, CXGH, CXUH	Phase between channels X and X + 1

Standard Cross-channel functions for up to 24 Channel Training		
	TrnAA(X,Y,Z)	The Asymmetry of the Z Band between the X and Y Channel
	TrnCO(X,Y,Z)	The Pure Coherence of the Z Band between the X and Y Channel
	TrnPH(X,Y,Z)	The Phase of the Z Band between the X and Y Channel
	TrnCM(X,Y,Z)	The Commodulation of the Z Band between the X and Y Channel
	TrnTC(X,Y,Z)	The Training Coherence of the Z Band between the X and Y Channel
DC and Slow Cortical Potentials Variables		
	DC1, DC2, ...	DC offset for Training channel 1, 2, ... 1 unit = 4 microvolts
	DCE1, DCE2, ...	Enhanced DC for channel 1, 2, ... 1 unit = 1 millivolt
	DCA1, DCA2, ...	DC Acquired channel 1, 2, ... 24 1 unit = 1 millivolt
	DCALL	DC average of all 19 10-20 channels (Discovery Only)
	DCFR	Frontal DC: Fp1 F3 F7 Fz Fp2 F4 F8 (Discovery Only)
	DCBK	Back DC: P3 P4 Pz T5 T6 O1 O2 (Discovery Only)
	DCLT	Left DC: Fp1 F3 F7 C3 T3 P3 T5 O1 (Discovery Only)
	DCRT	Right DC: Fp2 F4 F8 C4 T4 P4 T6 O2 (Discovery Only)
	DCFp1, DCFp2, DCF3, DCF4, ...	DC of any 10-20 site specified by name
Region of Interest Training Functions (Must have BrainAvatar LLP License)		
	LoretaROIA(ROI,Band)	Trains the band activity at the chosen region of interest. The number listing of the ROI's can be found at www.brainm.com/kb/entry/461. The bands are 1 - Delta, 2 - Theta, 3 - Alpha, 4 - Lobeta, 5 - Beta, 6 - Hibeta, 7 - Gamma, 8 - User
	LoretaROIAL(ROI,Band)	Trains the band activity at the Left Hemisphere of the chosen region of interest. The number listing of the ROI's can be found at www.brainm.com/kb/entry/461. The bands are 1 - Delta, 2 - Theta, 3 - Alpha, 4 - Lobeta, 5 - Beta, 6 - Hibeta, 7 - Gamma, 8 - User
	LoretaROIAR(ROI,Band)	Trains the band activity at the Right Hemisphere of the chosen region of interest. The number listing of the ROI's can be found at www.brainm.com/kb/entry/461. The bands are 1 - Delta, 2 - Theta, 3 - Alpha, 4 - Lobeta, 5 - Beta, 6 - Hibeta, 7 - Gamma, 8 - User

Region of Interest Coherence Training Functions (Must have BrainAvatar LLP and Connectivity Suite License)		
	LoretaROIACoh(ROI1, Location, ROI2, Location, Band)	Trains the Connectivity between the chosen region of interests and its location (Left, Right, or Complete). The number listing of the ROI's can be found at https://brainmaster.com/kb-entry/id461/. The bands are in the order and the number that matches on Bands Tab.
	LoretaROIACohL(ROI1, ROI2, Band)	Trains the Connectivity between the Left Hemisphere of the chosen region of interest. The number listing of the ROI's can be found at https://brainmaster.com/kb-entry/id461/. The bands are in the order and the number that matches on Bands Tab.
	LoretaROIAR(ROI1, ROI2, Band)	Trains the Connectivity between the Right Hemisphere of the chosen region of interest. The number listing of the ROI's can be found at https://brainmaster.com/kb-entry/id461/. The bands are in the order and the number that matches on Bands Tab.
	LoretaROIALR(ROI1, ROI2, Band)	Trains the Connectivity between the chosen region of interest. The number listing of the ROI's can be found at https://brainmaster.com/kb-entry/id461/. The bands are in the order and the number that matches on Bands Tab.
Values from other events:		
	EXA	values of "antecedent" variables in Events. These are the selected component values, or the values of the "x=" equation in the "IF" portion of the event design, where X is the Event Number that you would like to be utilized
	EXB	"values of ""condition"" variables in Events. These are the selected component values, or the values of the ""x="" equation after the ""RULE"" portion of the event design, where X is the Event Number that you would like to be utilized"
	EXF	values of flags for Events. These are 0 if the event's condition is not met, and 1.0 if the event's condition is met, where X is the Event Number that you would like to be utilized
	EXP	percent time meeting the condition for Events. These allow any events to "see" how often other events are "true" and use these values in rules, where X is the Event Number that you would like to be utilized. Values are returned as percent, e.g. between 0 and 100

Built-in Event Control Variables		
	INHFX, ENHFX, NUMEX	channel X training flags: number of “stops” meeting criterion, number of “gos” meeting criterion, number of possible “go’s”
	ALLOK	Indicates that all “gos” are met, and no “stops” exceed threshold. Use e.g. “x=ALLOK” for Event 5, to allow games like BrainMan and BrainCell to work automatically with any amplitude-based protocol that is set up using the standard “Training Protocol” setup.
Special Built-in Functions (note that “arg” can be any number or variable name, including other Event Values, flags, etc. etc.		
	Zor1(arg)	returns 0 if argument is <1, 1 otherwise. Note: when used with a fraction e.x. X/Y, returns 1.0 if X >= Y, 0.0 otherwise
	GT(arg)	returns 0 if argument is <1, 1 otherwise. Note: when used with a fraction e.x. X/Y, returns 1.0 if X >= Y, 0.0 otherwise
	Rng(arg1, arg2, arg3)	returns 0 if arg1 is within arg2 of arg3. E.g. Rng (C1AF, 0.5, 10) returns 1 if Channel 1 Alpha Frequency is within 0.5 Hz of 10 Hz. E.g. between 9.5 and 10.5 Hz, and returns 0 otherwise
	Bnd(channel, low, high) or Band(channel, low, high)	returns total FFT energy in a band for a channel. E.g. Bnd(2, 4, 6) returns the energy in channel 2 between 4 Hz and 6 Hz
	Modf(channel, low, high)	returns modal frequency (“first moment”) from FFT in a band for a channel. E.g. Modf(2, 4, 6) returns the modal frequency in channel 2 in band from 4 Hz to 6 Hz
	Peakf(channel, low, high)	returns peak frequency (highest amplitude) from FFT in a band for a channel. E.g. Modf(2, 4, 6) returns the peak frequency in channel 2 in band from 4 Hz to 6 Hz
	SetPhoticRate(rate) or SPR(rate)	sets rate of photic stimulation to value given by “rate”
	SetPhoticRates(left, right)	Sets rate of photic stimulation for the left and right independently
	SetPhoticEnable(left, right)	Enables or disables the right or left photic stimulation. 1.0 will enable, while 0.0 will disable
	SetPhoticAmplitudes(left, right)	Sets the photic amplitudes for the left and right independently

Built-in Constants		
	Schumann, SCH	Schumann Frequency = 7.81
	PHI, GOLDEN, GM	Golden Mean = 1.618
	PI	PI = 3.14159
Standard Operators: Note: all arguments and parameters are treated as double precision floating point values		
	+ - * /	add, subtract, multiply, divide
	%	modulus returns the remainder after an integer division
	^	power: y = x ^ 2
	()	parenthetical gropuing, unlimited, e.g. (2 + BETA) / THETA
	;	semicolon, needed at end of each equation in formula
	//	comment, single line
	/*...*/	comment, multiple lines
	,	comma, used to separate equations in a single event without ending the equation
Priority of Operators:		
	()	highest
	^	next
	-x (unary minus)	next (e.g. y=-x^2, the ^ occurs before -)
	*/^	next
	+-	lowest
Logical Operators:		
	and	Compares two different items. If they are both true, the event returns a value of 1. If both are not true, the event returns a value of 0.
	or	Compares two different items. If either is true, the event returns a value of 1. If neither are true, the event returns a value of 0
	<	Compares to see if one item is less than another item. If the statement is true, the event returns a value of 1. If the statement is not true, the event returns a value of 0

Logical Operators:	
>	Compares to see if one item is greater than another item. If the statement is true, the event returns a value of 1. If the statement is not true, the event returns a value of 0
<=	Compares to see if one item is less than or equal to another item. If the statement is true, the event returns a value of 1. If the statement is not true, the event returns a value of 0
>=	Compares to see if one item is greater than or equal to another item. If the statement is true, the event returns a value of 1. If the statement is not true, the event returns a value of 0
==	Compares to see if one item is equal to another item. If the statement is true, the event returns a value of 1. If the statement is not true, the event returns a value of 0
if(x,y,z)	Compares the value that is returned in x. If it is a true statement, the it executes the value of y. If it is untrue, then it will execute the value of z
Standard Built-in Functions:	
abs(x)	return absolute value
acos(x)	calculates arccosine
asin(x)	calculates arcsine
atan(x)	calculate arctangent
asinh(x)	calculates the hyperboloic arcsine
acosh(x)	calculates the hyperbolic arccosine
atanh(x)	calculates the hyperbolic arctangent
Cos(x)	Calculates cosine
Cosh(x)	Calculates hyperbolic cosine
exp(x)	Calculates exponential function “e to the x”
log(x), log10(x)	Calculates base-10 logarithm
log2(x)	Calculates base-2 logarithm
ln(x)	Calculates natural logarithm
max(a,b,c,d,...)	Compares all variables. Returns the largest value
min(a,b,c,d...)	Compares all variables. Returns the smallest value
sin(x)	Calculates sine
sinh(x)	Calculates hyperbolic sine

Standard Built-in Functions:	
tan(x)	Calculates tangent
tanh(x)	Calculates hyperbolic tangent
sqrt(x)	Calculates the Square Root
sign(x)	Compares the value of x. If x is greater than 0 the event returns a value of 1. If x is less than 0, the event returns a value of -1.
rint(x)	Rounds x to the nearest integer
sum(a,b,c,d,...)	Calculates all variables. Retuns the sum of this calculation.
avg(a,b,c,d...)	Returns the mean of all variables.
rand()	Returns a randomised value between 0 and 1
rand2(x,y)	Returns a randomised value between x and y
Z-Scores Variables up to 4 Channels	
ZAPXD, ZAPXT, ZAPXA, ZAPXB, ZAPX1, ZAPX2, ZAPX3, ZAPXG	channel X Absolute Power for 8 components
ZRPXD, ZRPXT, ZRPXA, ZRPXB, ZRPX1, ZRPX2, ZRPX3, ZRPXG	channel X Relative Power for 8 components
ZPRXDT, ZPRXDA, ZPRXDB, ZPRXDG, ZPRXTA, ZPRXTB, ZPRXAB, ZPRXAG, ZPRXBG	channel X Power Ratios for 10 ratios
ZAAXYD, ZAAXYT, ZAAXYA, ZAAXYB, ZAAXY1, ZAAXY2, ZAAXY3, ZAAXYG	Amplitude Asymmetry between channel X and Y for 8 components
ZCOXYD, ZCOXYT, ZCOXYA, ZCOXYB, ZCOXY1, ZCOXY2, ZCOXY3, ZCOXYG	Coherence between channel X and Y for 8 components
ZPHXYD, ZPHXYT, ZPHXYA, ZPHXYB, ZPHXY1, ZPHXY2, ZPHXY3, ZPHXYG	Phase between channel X and Y for 8 components
Z-Scores Functions	
ZScoreZAP(X,Y)	Retuns the Absolute Power Standard Deviation of the X Channel and Y Band
ZScoreZRP(x,y)	Returns the Relative Power Standard Deviation of the X Channel and Y Band
ZScoreZPR(X,Y)	Returns the Power Ratio Standard Deviation of the X Channel and Y Band
ZScoreZAA(X,Y,Z)	Returns the Asymmetry Standard Deviation of the Z Band between Channels X and Y

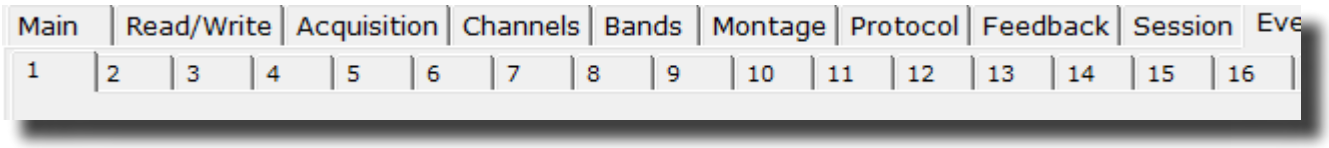
Z-Scores Functions	
ZScoreZCO(X,Y,Z)	Returns the Coherence Standard Deviation of the Z Band between Channels X and Y
ZScoreZPH(X,Y,Z)	Returns the Phase Standard Deviation of the Z Band between Channels X and Y
PercentZOK(range), PZOK(range)	Percentage of Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZOKUL(upper, lower), PZOKUL(upper, lower)	Percentage of Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZAOK(range), PZAOK(range)	Percentage of ABSOLUTE POWER Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZAOKUL(upper, lower), PZAOKUL(upper, lower)	Percentage of ABSOLUTE POWER Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZROK(range), PZROK(range)	Percentage of RELATIVE POWER Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZROKUL(upper, lower), PZROKUL(upper, lower)	Percentage of RELATIVE POWER Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZPROK(range), PZPROK(range)	Percentage of POWER RATIO Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZPROKUL(upper, lower), PZPROKUL(upper, lower)	Percentage of POWER RATIO Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZASOK(range), PZASOK(range)	Percentage of ASYMMETRY Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZASOKUL(upper, lower), PZASOKUL(upper, lower)	Percentage of ASYMMETRY Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZCOK(range), PZCOK(range)	Percentage of COHERENCE Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZCOKUL(upper, lower), PZCOKUL(upper, lower)	Percentage of COHERENCE Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100

Z-Scores Functions	
PercentZPOK(range), PZPOK(range)	Percentage of PHASE Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZPOKUL(upper, lower) or PZPOKUL(upper, lower)	Percentage of PHASE Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
PercentZCCOK(range), PZCCOK(range)	Percentage of ALL CONNECTIVITY Z scores that are within “range” of normal. Returns value between 0 and 100
PercentZCCOKUL(upper, lower), PZCCOKUL(upper, lower)	Percentage of ALL CONNECTIVITY Z scores that are below upper limit, and above lower limit. Returns value between 0 and 100
sLORETA Z-Scores Functions (To be used with BrainDX (optional purchase), or BrainMaster (BrainAvatar Only) Z-Score DLLs	
LoretaROIZAP(ROI,Band)	Trains the Absolute Power at the chosen region of interest. The number listing of the ROI’s can be found at www.brainm.com/kb/entry/461.
LoretaROIZAPL(ROI,Band)	Trains the Absolute Power at the Left Hemisphere of the chosen region of interest. The number listing of the ROI’s can be found at www.brainm.com/kb/entry/461.
LoretaROIZAPR(ROI,Band)	Trains the Absolute Power at the Right Hemisphere of the chosen region of interest. The number listing of the ROI’s can be found at www.brainm.com/kb/entry/461.
PercentZBRA(range) or PZBRA(range)	Percentage of sLORETA Z Scores that are within “range” of normal. Returns a value between 0 and 100
PercentZBRAUL(upper, lower) or PZBRA(upper, lower)	Percentage of sLORETA Z Scores that are below the upper limit and above the lower limit. Returns a value between 0 and 100
sLORETA ROI Coherence Z-Scores Functions - Requires an sLORETA Z-Score Training DLL (qEEGPro and Zbuilder only), Connectivity Suite, and BrainAvatar LLP License	
LoretaROIZCoh(ROI1, Location, ROI2, Location, Band)	Trains the Connectivity Z-Scores between the chosen region of interests and its location (Left, Right, or Complete). The number listing of the ROI’s can be found at www.brainm.com/kb/entry/461.
LoretaROIZCohL(ROI1, Location, ROI2, Location, Band)	Trains the Connectivity Z-Scores between the Left Hemisphere chosen region of interest. The number listing of the ROI’s can be found at www.brainm.com/kb/entry/461.

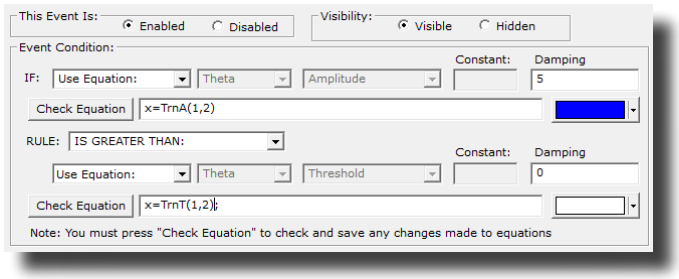
sLORETA ROI Coherence Z-Scores Functions - Requires an sLORETA Z-Score Training DLL (qEEGPro and Zbuilder only), Connectivity Suite, and BrainAvatar LLP License	
LoretaROIZCohR(ROI1, Location, ROI2, Location, Band)	Trains the Connectivity Z-Scores between the Right Hemisphere of the chosen regions of interests. The number listing of the ROI's can be found at www.brainm.com/kb/entry/461.
LoretaROIZCohLR(ROI1, Location, ROI2, Location, Band)	Trains the Connectivity Z-Scores between the chosen region of interests. The number listing of the ROI's can be found at www.brainm.com/kb/entry/461.
PercentZROICO(range) or PZROICO(range) or PercentZROICoherence(range)	Percentage of sLORETA ROI Coherence Z Scores that are within "range" of normal. Returns a value between 0 and 100
PercentZROICOUL(upper, lower) or PZROICOUL(upper, lower) or PercentZROICoherenceUL(upper, lower)	Percentage of sLORETA ROI Coherence Z Scores that are below the upper limit and above the lower limit. Returns a value between 0 and 100

Designing an Event

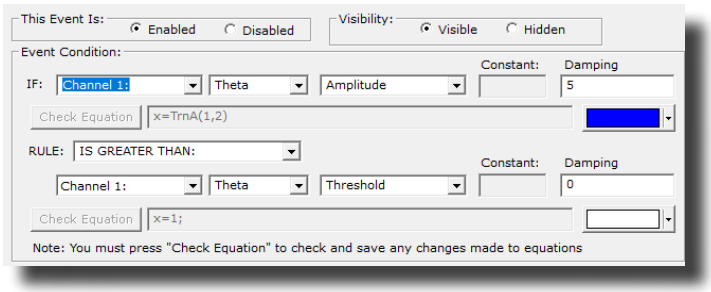
1. On The Event Wizard Screen, choose the Event Number that you would like to work with (For this Example, we will work with Event 1).



2. Next, set the Event Condition (For this example, we are going to reward the Channel 1 Theta band, when it is greater than its threshold). There are many ways that the Event Wizard can define what is being trained (See Attached pictures). If an equation is used, the Check Equation Button must be clicked, or it will not save this.

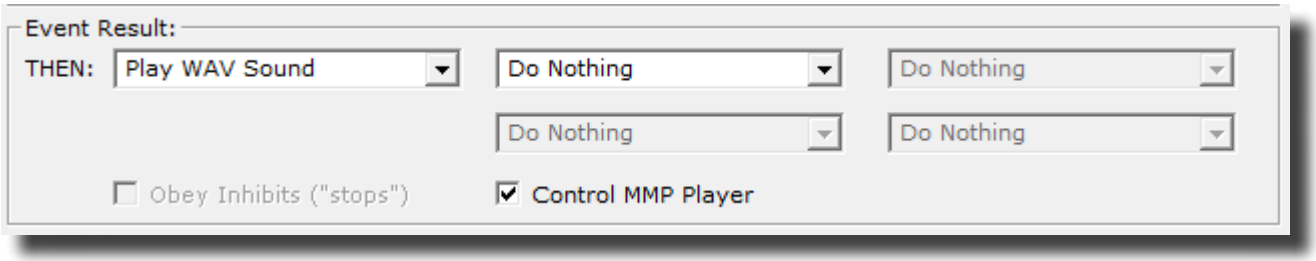


Event Condition with Equations



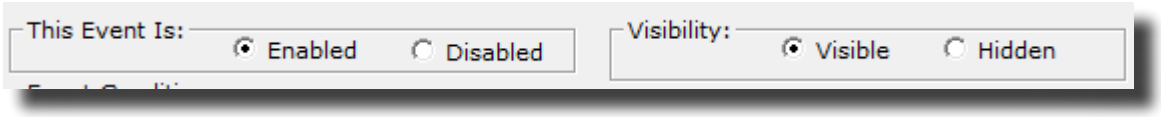
Event Condition with Channels

3. Next, set the Event Result (For This example, if the Event Condition is met, a .wav will play. This will also Control BMrMMP).

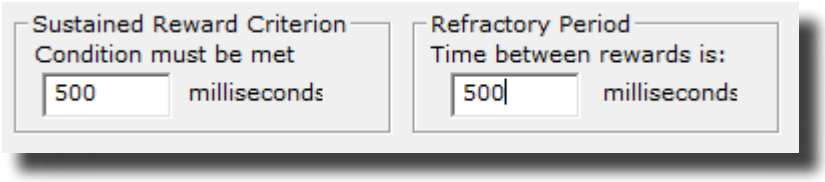


4. Next, set the size of the Event Trend Graph. If you are not going to make your graph visible, you do not need to do anything with this (For this example, the graph will range from 0 to 20).

5. Next, you will need to make sure, that the Event is enabled. You will also need to choose whether you would like it visible or not. If the Event is not enabled, it will not work. But, if the Event is Hidden, it will still operate. Also, if you would like the event to have a personalized name, do so now.

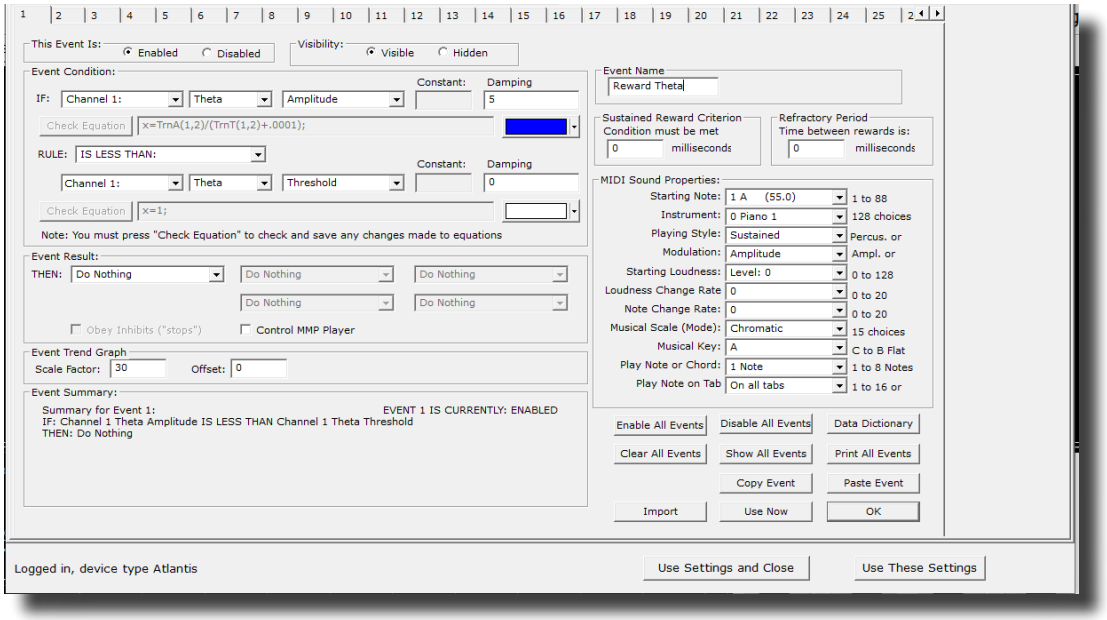


6. Next, set the Sustained Reward Criterion, Refractory Period and the properties of the MIDI Sound. If you are not utilizing a MIDI sound for a reward sound, you do not have to set this. The Sustained Reward Criterion and Refractory Period effect how often a reward can be give (For this example, the Sustained Reward Criterion and Refractory Period are both set for 500 milliseconds. This means, that a reward will not be given unless the client stays above the threshold for 500 milliseconds. Then, another reward is not possible for another 500 milliseconds).



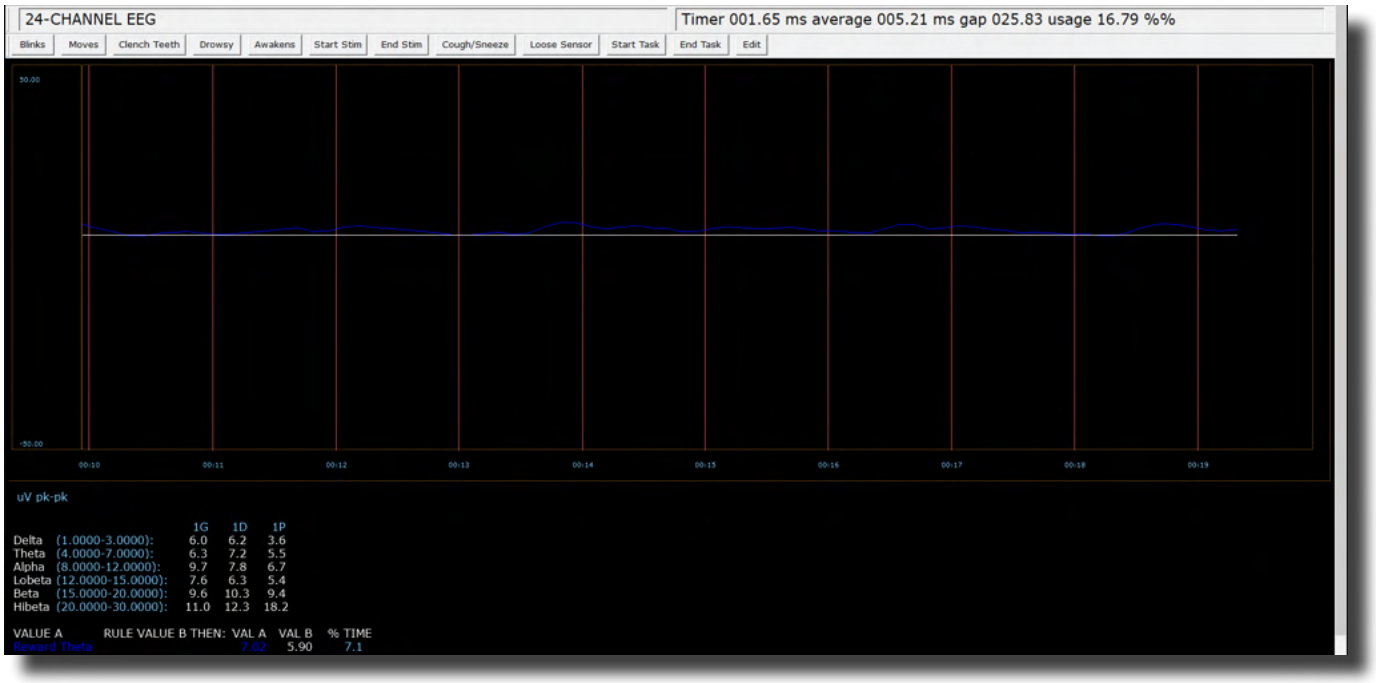
7. Finally, Set the Event Name to something that makes sense to what you are doing (For this example, the Event Name is Reward Theta). This is a completely optional. So, if you do not name the Event, it will simply display the Event Condition as its name.

8. View the entire Event Wizard Screen to confirm that the Event is set up to your needs. When ready, click the Use Now Button, and then either move to the next Event or Close the Setup Window.



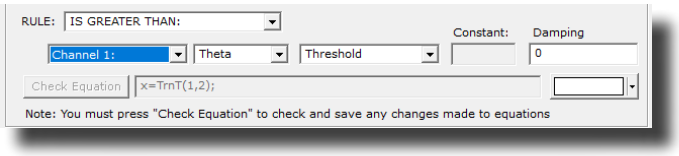
Event Wizard

The Event Wizard has been set for the Client Folder. You will be able to tell this during the running of a session. If the Event was set to Visible, then you will see a graph if you choose the Display Event Trend Graph, or Wide Event Trend Graph. If you do not have the Event set to Visible, then you can still see that this is occurring through the Display Text Stat Panel. If you have placed a name for the Event, this will be reflected in the Text Stats, if you have these displayed, as well as the Thermometer Contour Display.

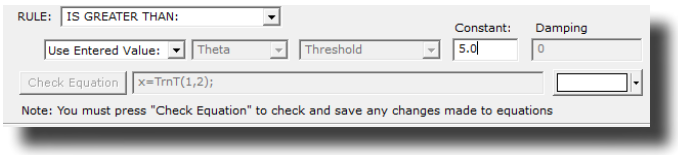


Making a Threshold to be dragged by the Thermometer

1. In order to make an adjustable threshold through a Thermometer, the Event Rule must be changed from a “Use Equation” defined threshold, to a “Use Channel 1” Threshold, or Use Entered Value.

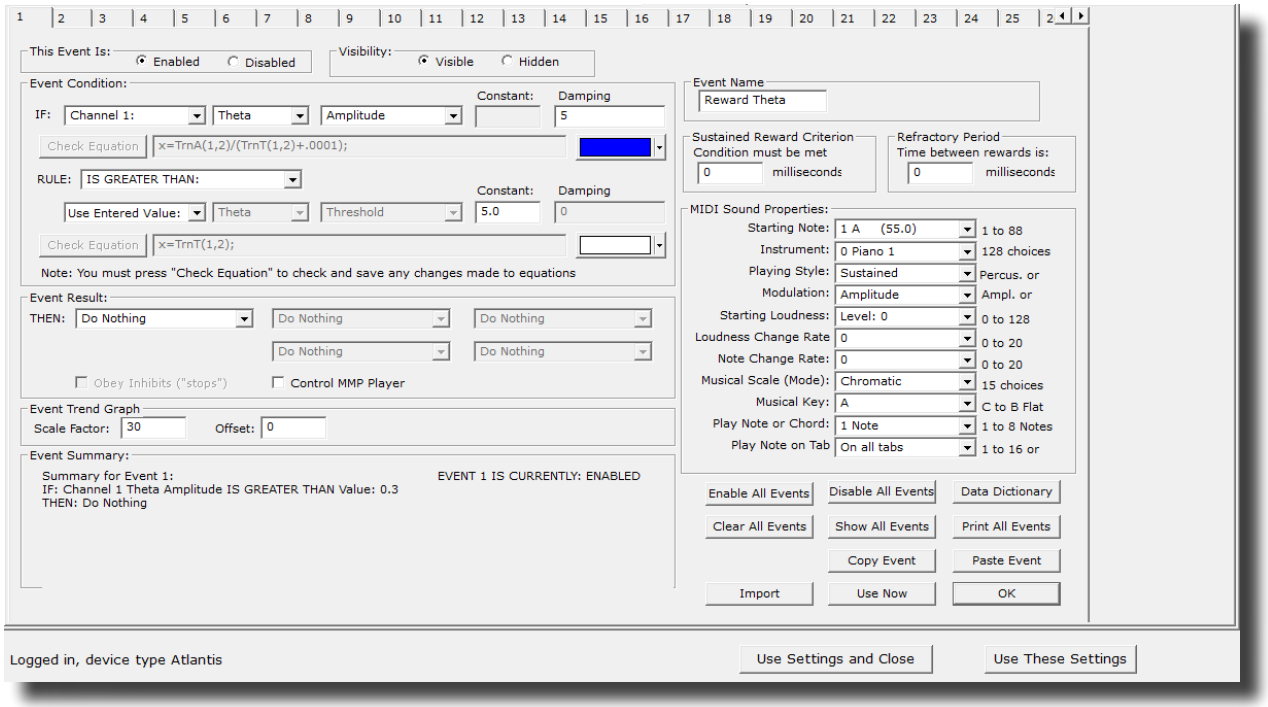


Use Channel 1 Example

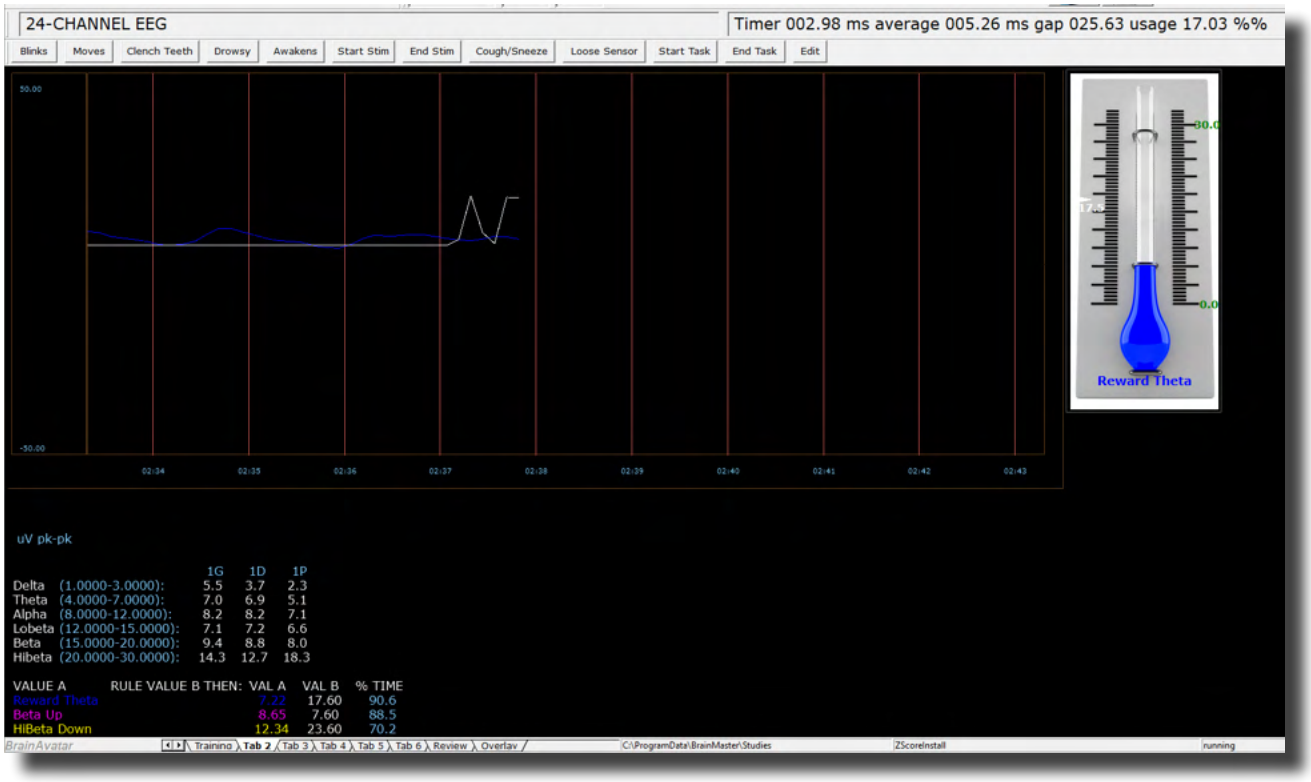


Use Entered Value Example

2. If there are no additional changes that are required, click the Use Settings and CloseButton.

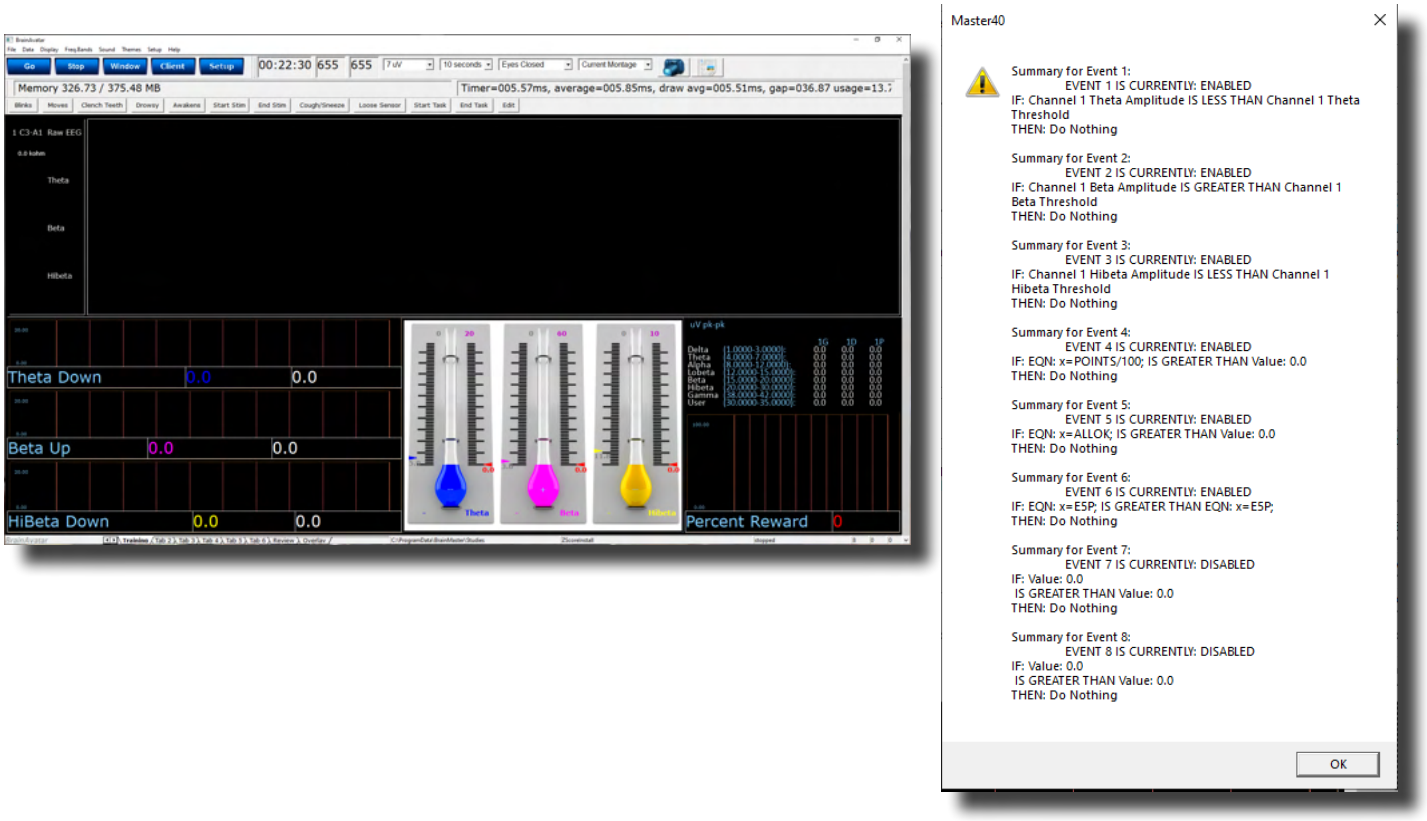


The Event Threshold will now be able to be controlled through the Thermometer Contour Display, by Clicking on the Threshold indicator on the left of this Display. ***PLEASE NOTE: This only works with Thermometers that are displaying Events. This does not work with Thermometers that are displaying standard band values.



Basic BrainMaster Setting Protocol through the Event Wizard

Standard Amplitude (Alert)



Event 1: IF Channel 1 Theta Amplitude IS LESS THAN Channel 1 Theta Threshold - This gives a Graphical and Text View of the Low Inhibit Training

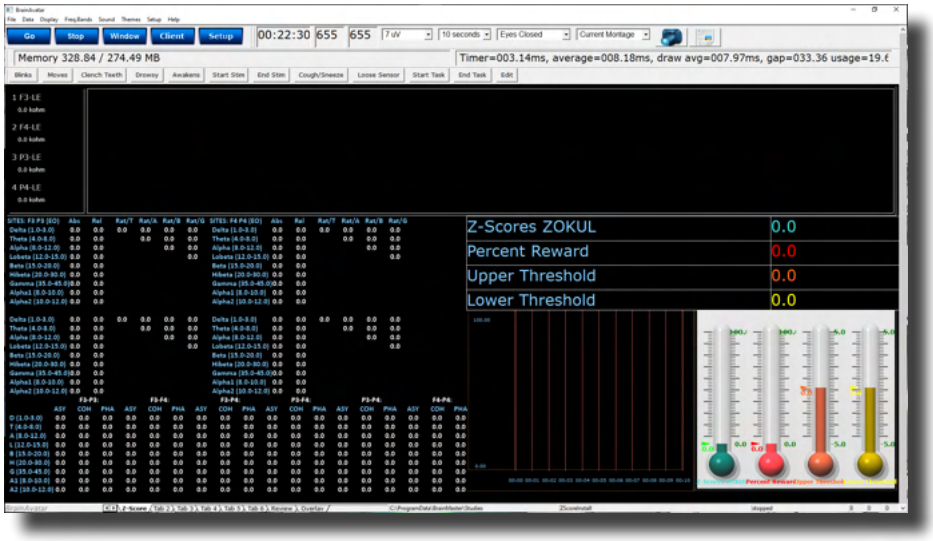
Event 2: IF Channel 1 Beta Amplitude IS GREATER THAN Channel 1 Beta Threshold - This gives a Graphical and Text View of the The Reward Training

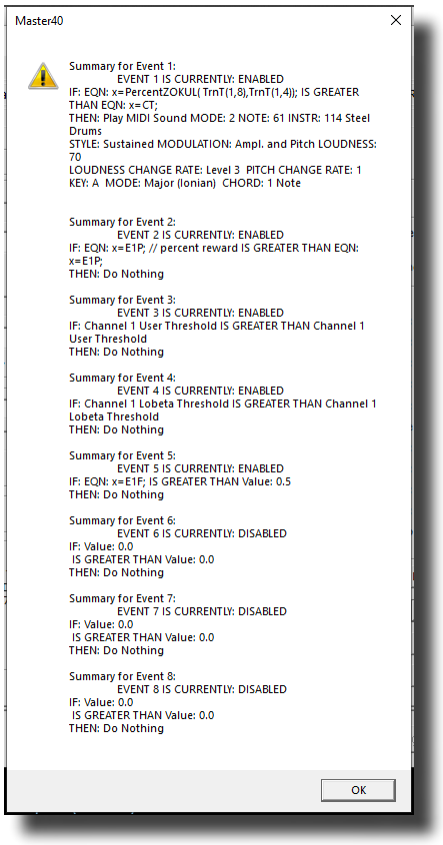
Event 3: IF Channel 1 HiBeta Amplitude IS LESS THAN Channel 1 HiBeta Threshold - This shows the ratio of the hi "stop" inhibit to its threshold.

Event 4: x=POINTS/100 - This shows the points divided by 100. This is merely for the Flash Game indicator.

Event 5: x=ALLOK - This indicates that all components meet criteria, and the Flash Game can "move" or proceed.

Standard Z-Score-Based Protocol (4 Chanel PZOKUL)





Event 1: x=PercentZOKUL(UTHR, -GTHR) IS GREATER THAN CT - This rewards the Percentage of Z-Scores that are with-in the ranges of the Upper Threshold (U Key) and Lower Threshold (L Key)that are above the threshold that is defined by the C Key.

Event 2: x=E1P - This shows the percentage of reward for Event 1.

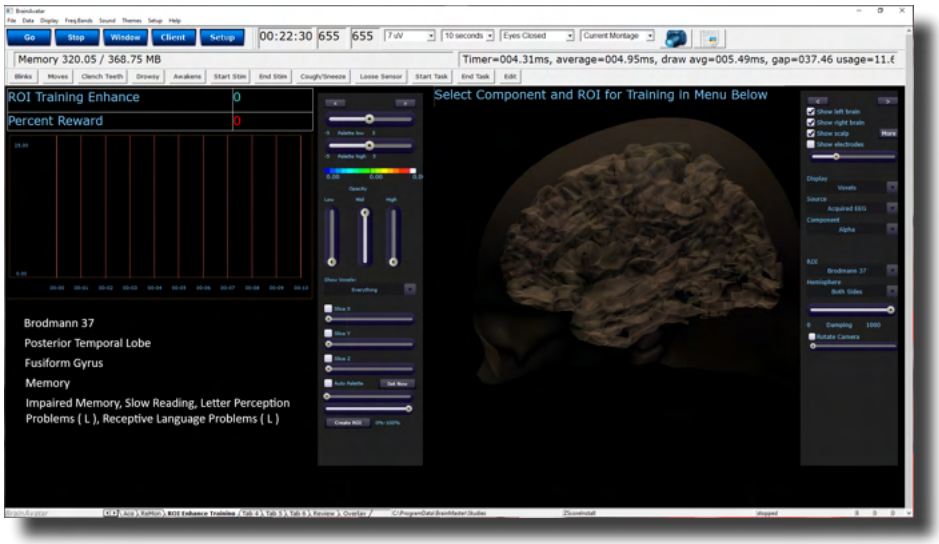
Event 3: x=-GTHR is greater than x=-GTHR - This gives a graphical representation for the Lower threshold for the Z-Score equation.

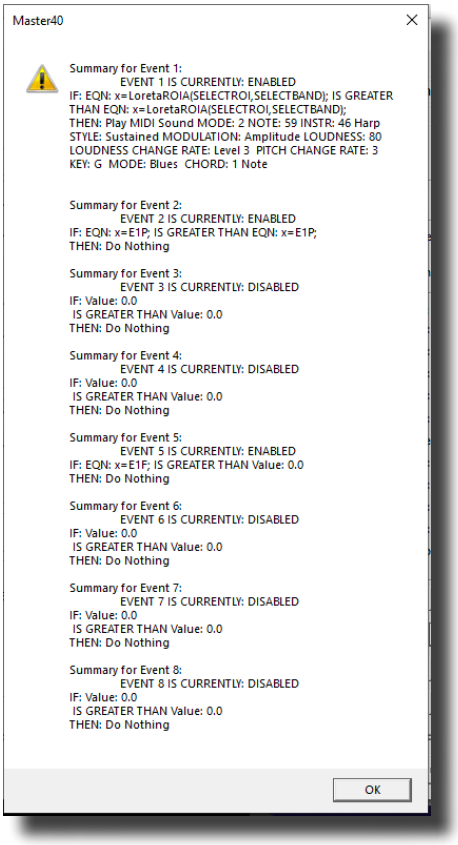
Event 4: x=UTHR is greater than x=UTHR - This gives a graphical representation for the Upper threshold for the Z-Score equation.

Event 5: x=E1F is greater than 0.5 - This flags Event 1. When the Event 1 meets its Event Condition, Event 5 produces a 1, which indicates that this component has met criteria, and the Flash Game can “move” or proceed.

Event Wizard

Z-Score-Based Protocol (4 Chanel PZOKUL)





Event 1: x=LoretaROIA(SELECTROI,SELECTBAND) IS GREATER THAN x= LoretaROIA(SELECTROI,SELECTBAND) - This will train the Region of Interest and the Band frequency that has been selected for viewing on ROI Head Map, and by using a damped (averaged)value of itself as the threshold creates a Dynamically changing Threshold.

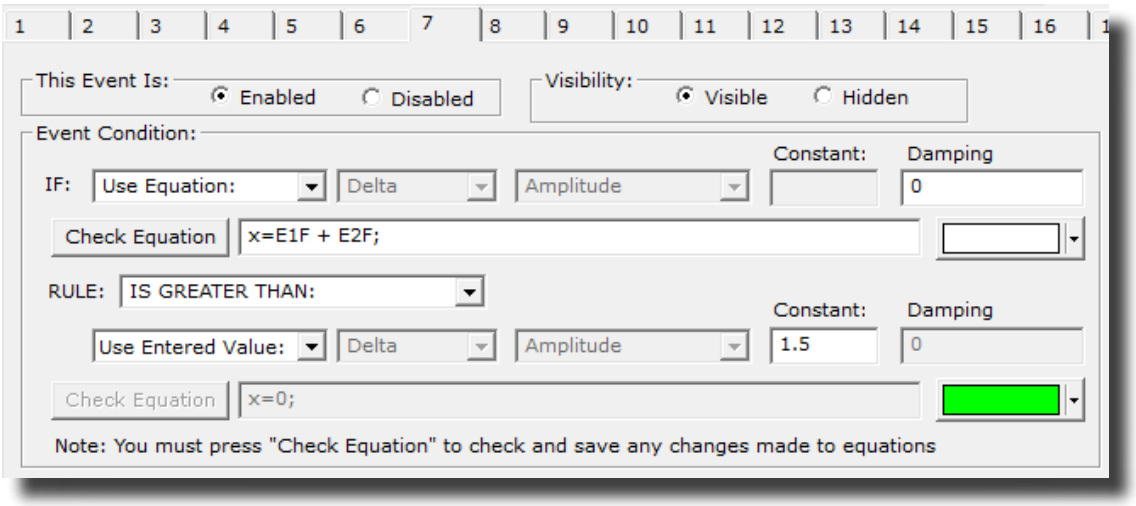
Event 2: x=E1P - This shows the percentage of reward for Event 1.

Event 5: x=E1F is greater than 0.5 - This flags Event 1. When the Event 1 meets its Event Condition, Event 5 produces a 1, which indicates that this component has met criteria, and the Flash Game can “move” or proceed.

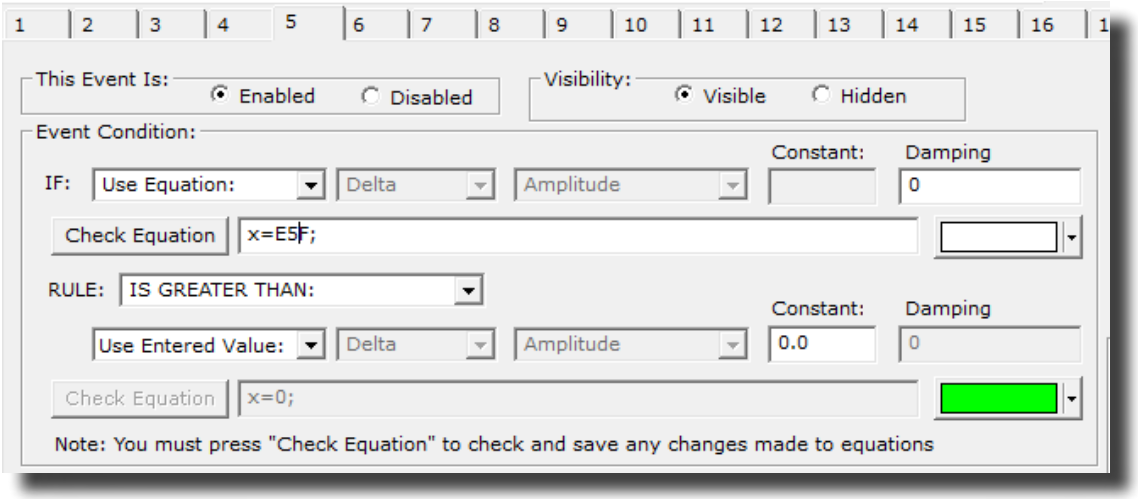
Advanced Event Wizard Controls

Enabling Multiple Events to control Flash Player (2 Event Example)

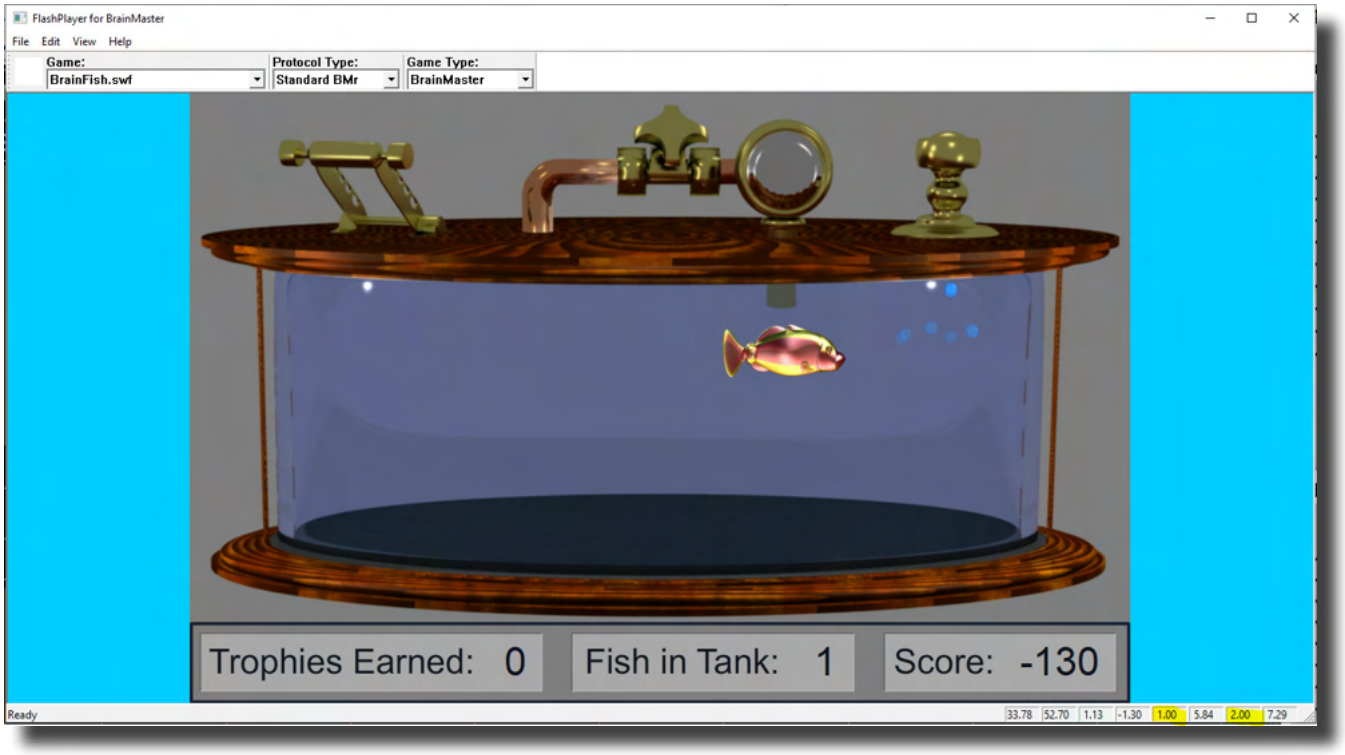
1. Create an Event (Event 7) that Flags (Whether the Event is True or False) for these Events, and requires them to be greater than the possible combination with-out all being met (For this example, since there are two Events, we want the Event Condition to be greater than 1.5. This way, we are only successful when both Event 1 and Event 2 have been met).



2. Next, we will need to flag the results of this last created Event into Event 5, so that the Flash Player can be controlled.

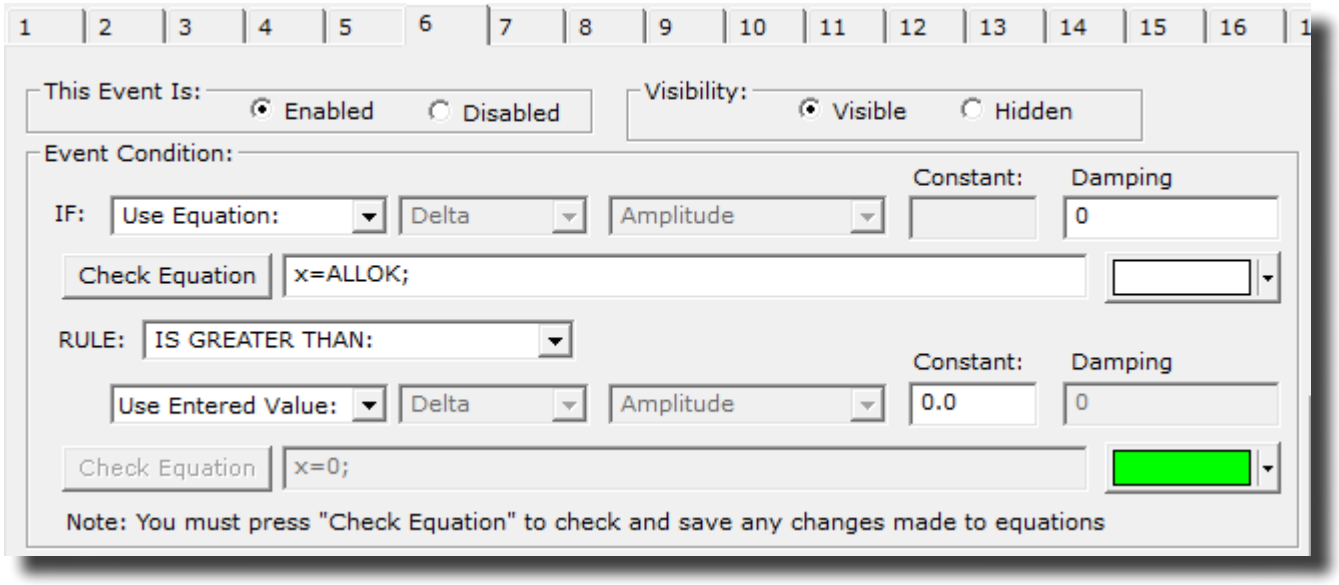


Your protocol will now be able to drive the Flash Player when all Event criteria has been met for the different Event Conditions. You will be able to tell, as you can see that the Flash Player will operate to Event 5, as well as seeing that Event 5 equals 1 when Event 7 equals 2.

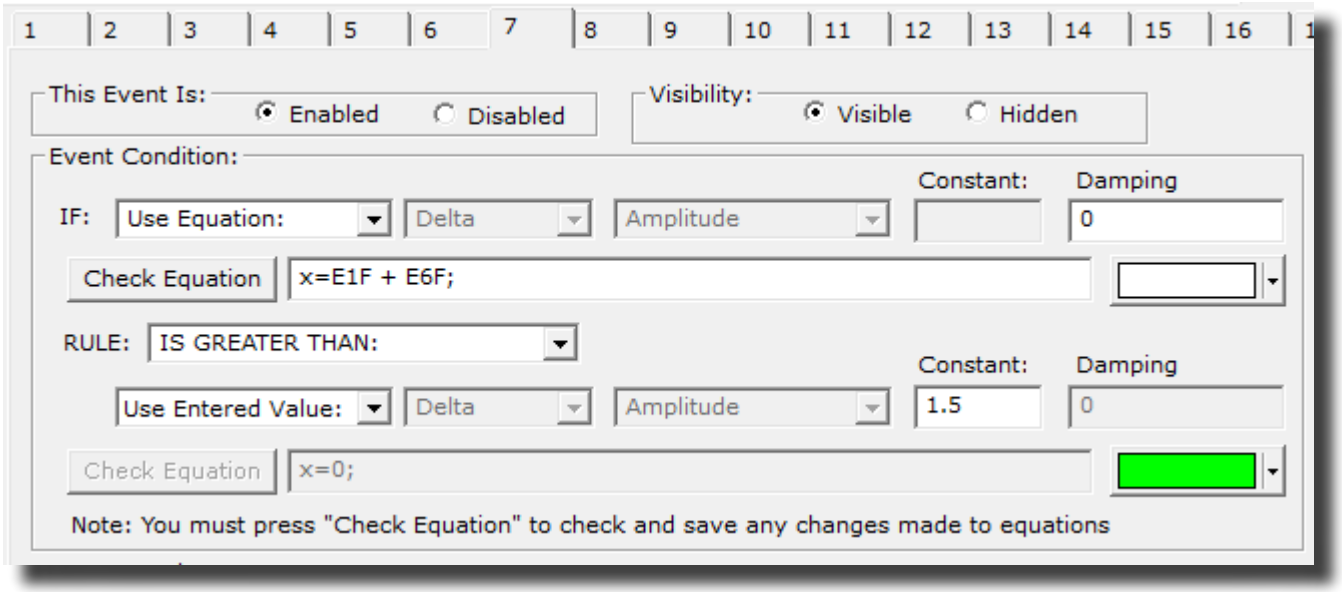


Enabling Amplitude Plus Events to control Flash Player

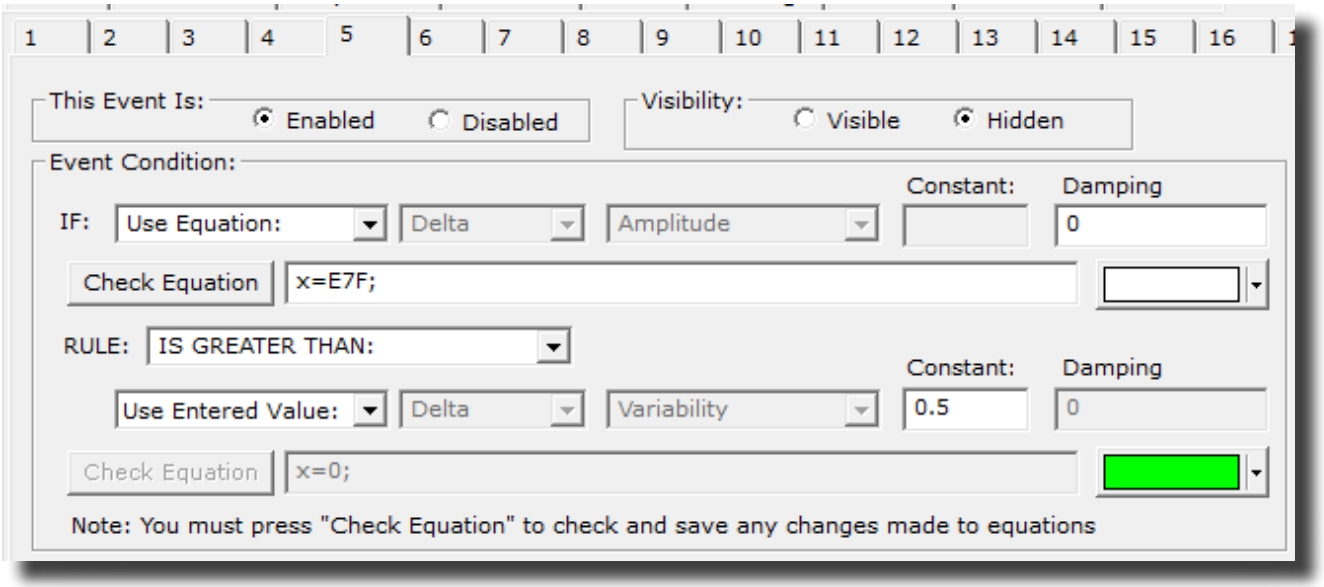
1. Create an Event (Event 6) to indicate that all amplitude components have met their criteria.



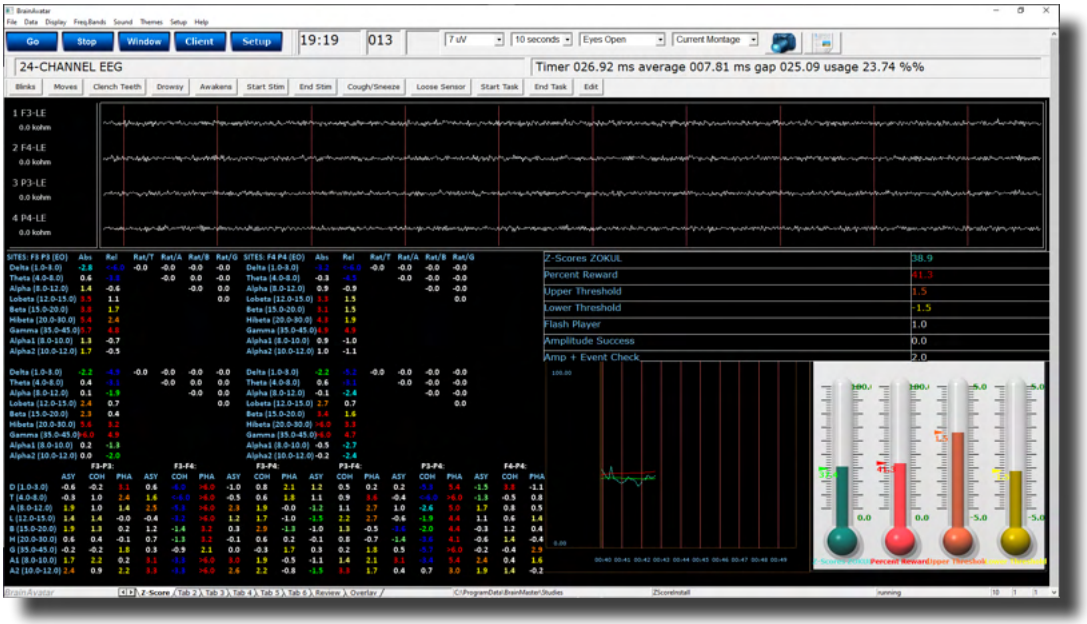
2. Create an Event (Event 7) that Flags these Events, and requires them to be greater than the possible combination with-out all being met (For this example, since there are two Events, we want the Event Condition to be greater than 1.5. This way, we are only successful when both Event 1 and Event 6 have been met).



3. Next, we will need to flag the results of this last created Event into Event 5, so that the Flash Player can be controlled.

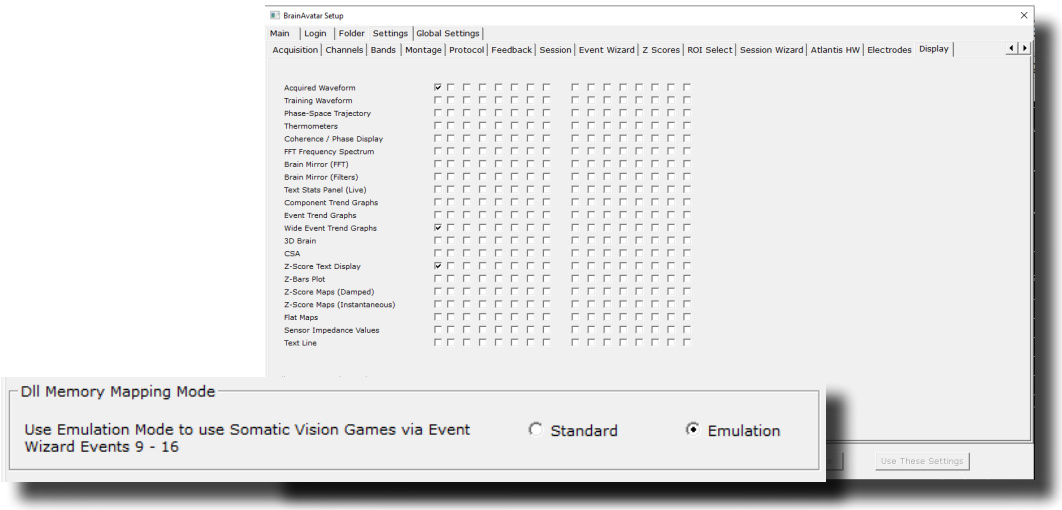


Your protocol will now be able to drive the Flash Player when all Event criteria has been met for the different Event Conditions. You will be able to tell, as you can see that the Flash Player will operate to Event 5



Enabling Events to control Third-Party Games

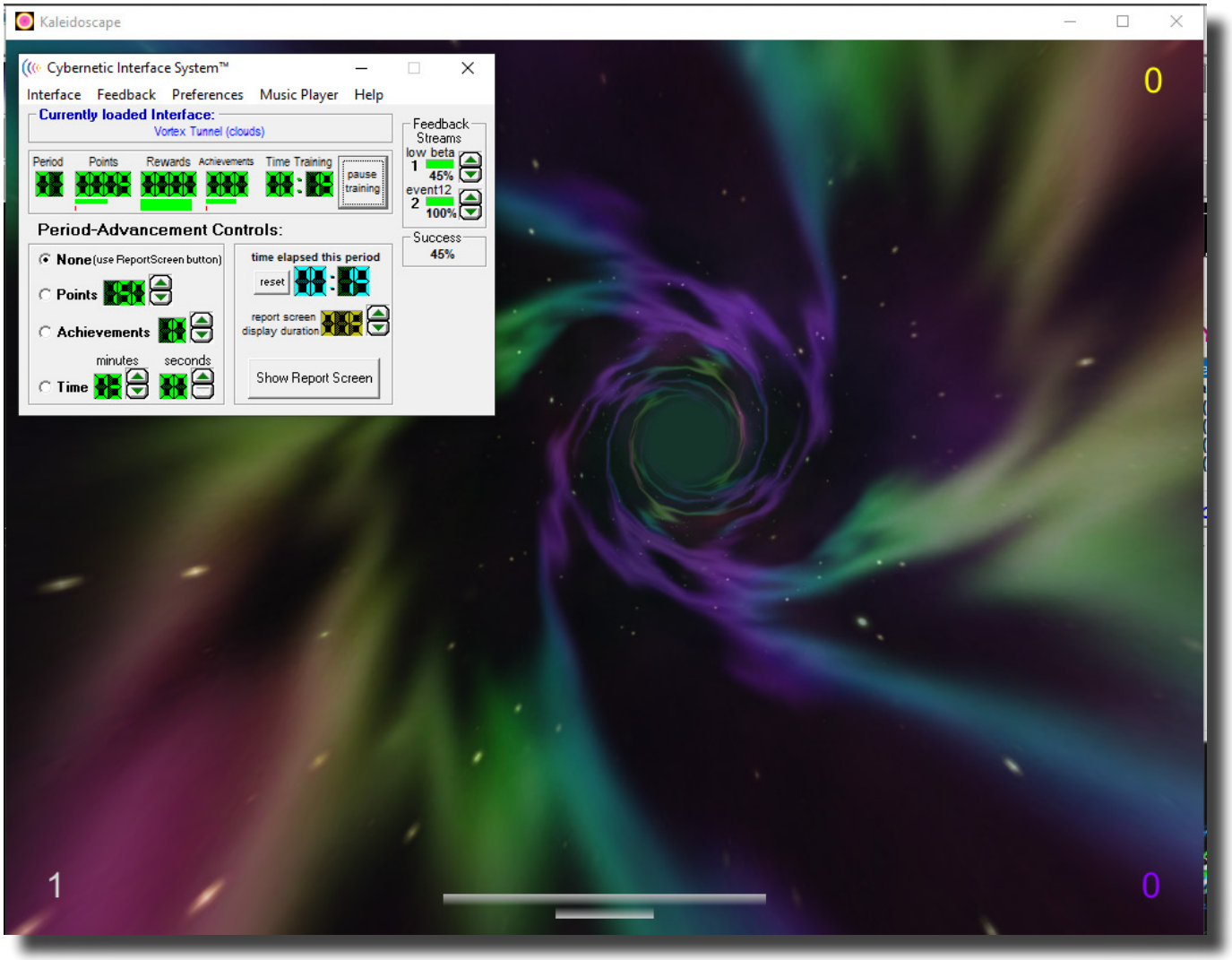
1. If the Third-Party game is a SomaticVision Game (InnerTube or Particle Editor), the BrainMaster Software has to be set into Emulation Mode. This is accomplished in the Display Options Menu under the DLL Memory Mapping Mode.



2. Next we have to set the Events so that they will properly operate. This is accomplished, by utilizing Events 9-16 to emulate the Filtered Waveforms (Somatic Vision) or is just used by that software (BeyondVR). A list of the Events to what band they are referring to, see below (For this example, we are going to want the game to react to training done on the Lobeta band. Because of this, we will use Event 12). For proper reaction, the Event Condition must be Event must be met (For this example, we want the training reaction from Event 1. So, because of this the Event Condition is "IF Equation: x=E1A, is GREATER THAN Equation x=E1B"). You can do this for up to all 8 Events.

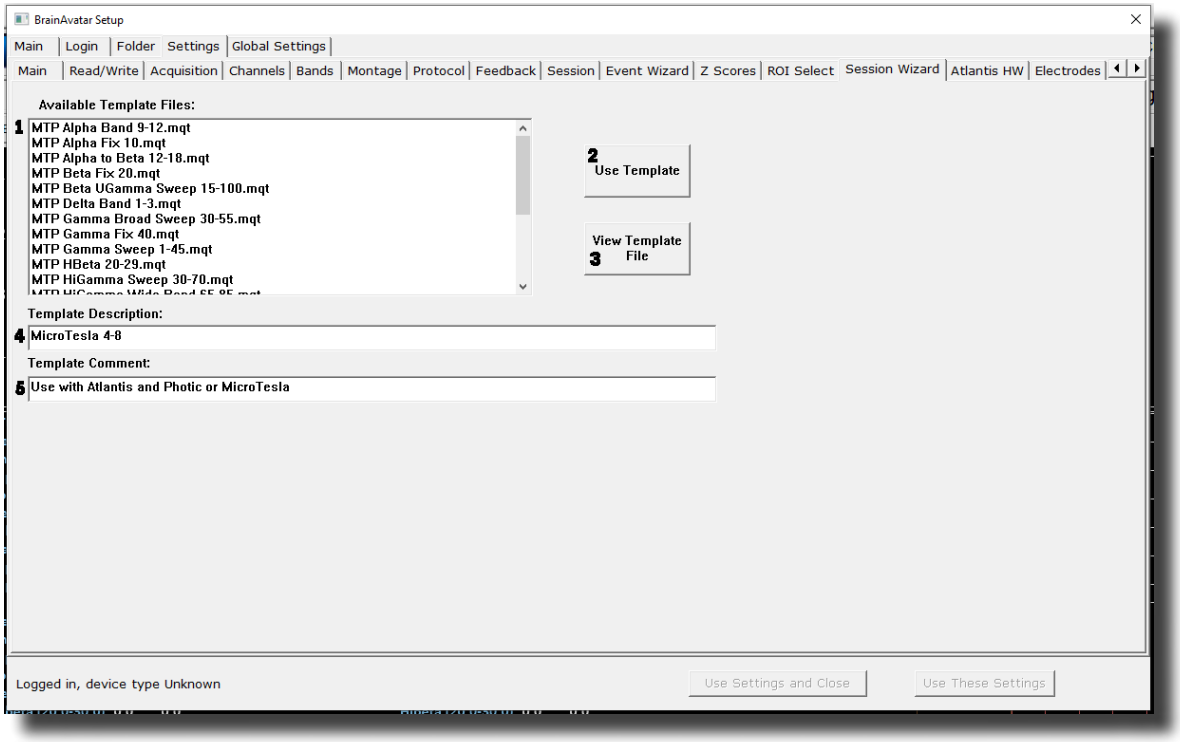
Event Number	Third-Party "Filtered band
9	Delta
10	Theta
11	Alpha
12	Lobeta
13	Beta
14	Hibeta
15	Gamma
16	User

You have now enabled the BrainMaster protocol to have its Events be seen as a Filtered waveband in the third-party game. You will be able to see this, by starting the third-party game, and seeing the band that you chose to affect the games reward. If this is not working, please make sure that you have set the reward for the game to the bands that you have chosen.



Session Wizard

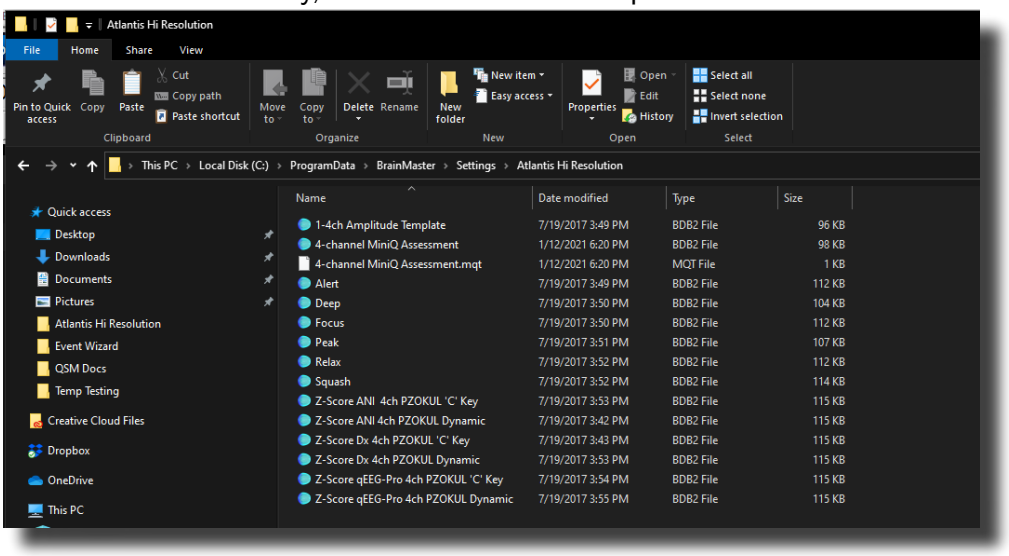
Session Wizard Control Screen



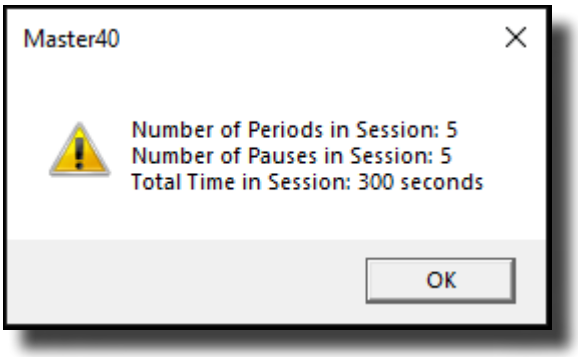
1. **Available Template Section –** Section where you can choose the Session Wizard Template you would like to use.
2. **Use Template Button –** Click to use the Session Wizard Template this is selected from the Available Template Section.
3. **View Template File Button –** Click to View the Template of the Session Wizard Template that has been selected.
4. **Template Description Section –** Section that displays the Template's description of the selected Session Wizard Template.
5. **Template Comment Section –** Section that displays the Template's comment of the selected Session Wizard Template.

Loading a Protocol that has a Pre-Loaded Session Wizard File

1. The Process for loading a Protocol that has a Pre-Configured Session Wizard File, is no different than the process in the BrainAvatar Trainee Screen (Page 35). Pre-Configured Protocols will have both the .bdb2 file as well as a .mqt file in the same working directory. If the matching .mqt file is not located in the same directory, this will not work as expected.

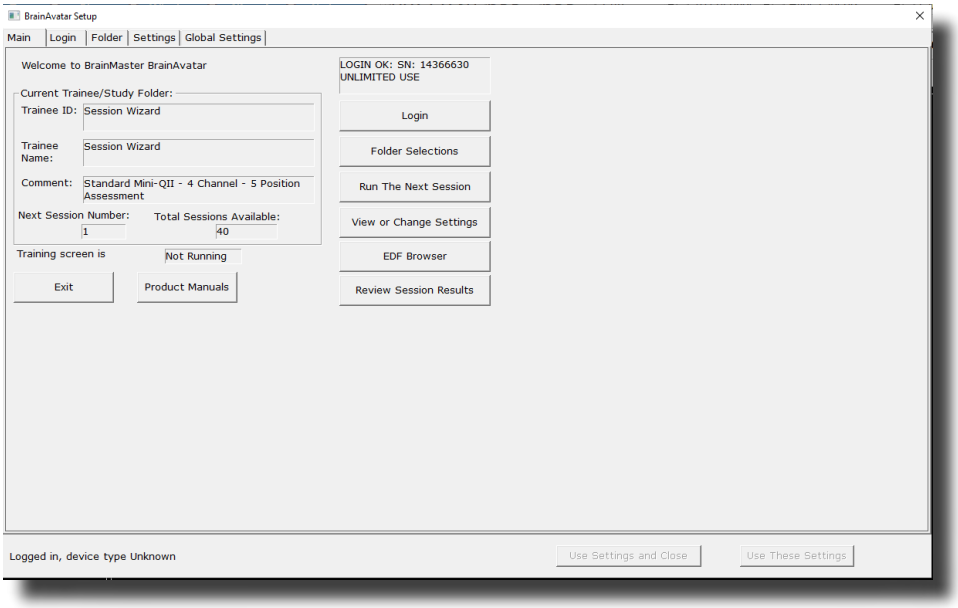


The protocol will now run, with various portions of the protocol being controlled by the Session Wizard File. You will be able to tell this, as there will be a message stating the Number of periods, pauses, and total time in the session, and/or site locations being acquired or trained.

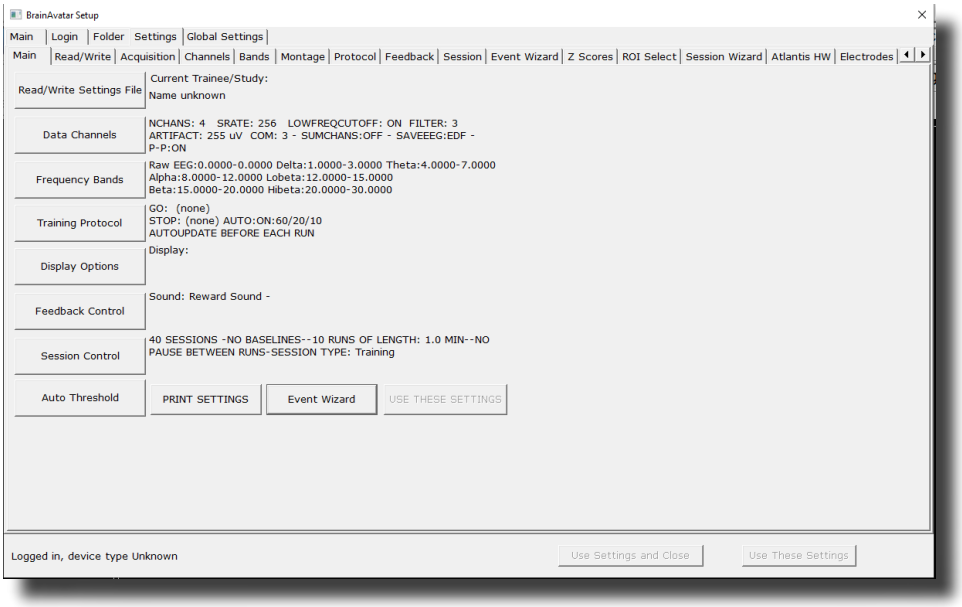


Loading a Session Wizard File to a Pre-Existing Protocol

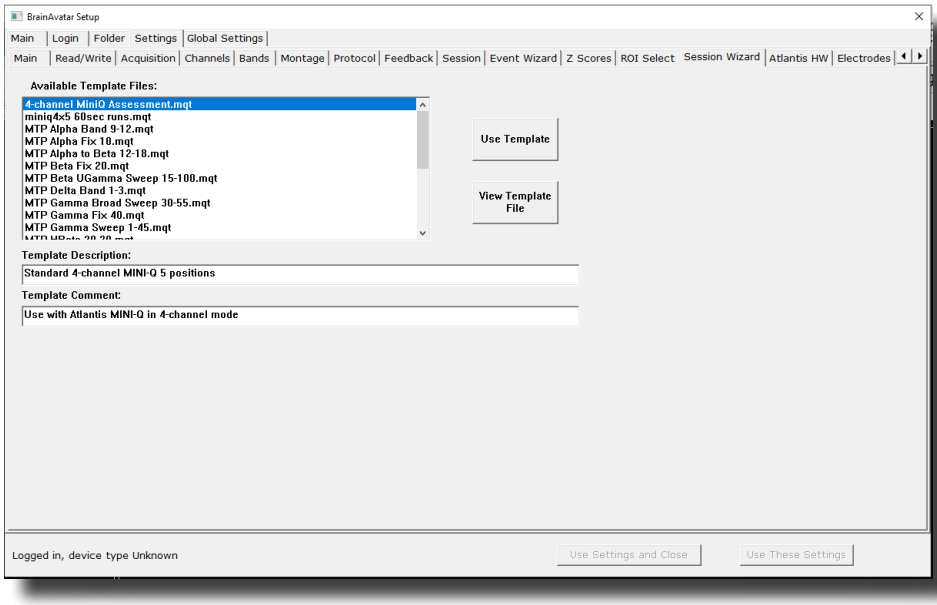
1. When you have loaded the trainee folder that you will utilize the Session Wizard File with, from the Main Menu, click the Settings Tab.



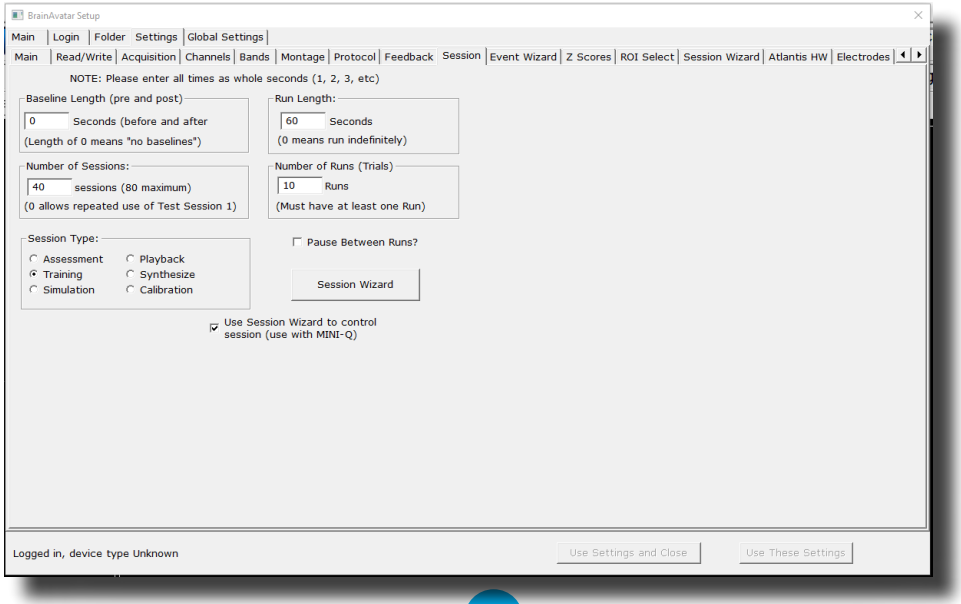
2. From the Setup Menu, click the Session Wizard Tab.



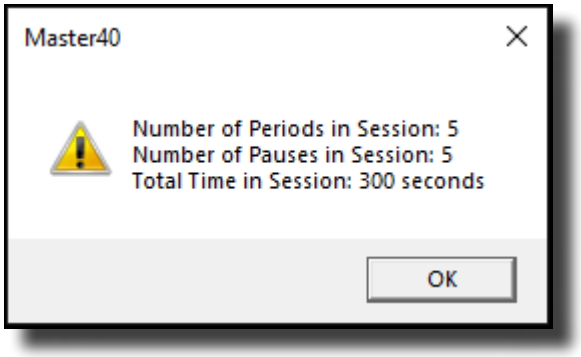
3. From the Session Wizard Control Menu, choose the Session Wizard Template you would like to use. When you have the file you would like to use, click the Use Template Button to confirm the choice.



4. From the Session Wizard Control Menu, choose the Session Tab, and click the Use Session Wizard to control session (use with MINI-Q) to allow Session Wizard to be utilized.



The protocol will now run, with various portions of the protocol being controlled by the Session Wizard File. You will be able to tell this, as there will be a message stating the Number of periods, pauses, and total time in the session, and/or site locations being acquired or trained.



Data Dictionary for the Session Wizard

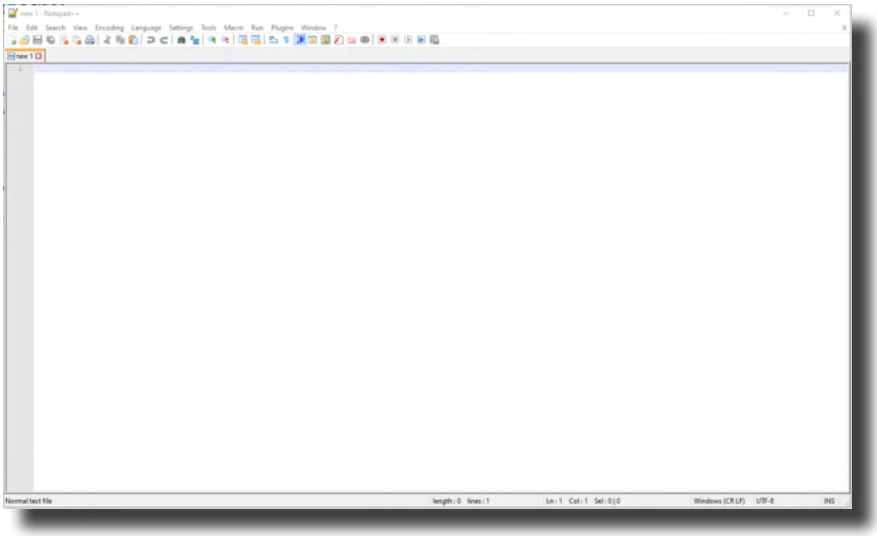
Session Wizard Basic Variables	
NAME	Defines the name of the Session Wizard Template. The name placed here, will be in view on the Sesssion Wizard Control Screen.
VERSION	Defines what version of the Session Wizard Template. This is not displayed anywhere only in the actual Session Wizard Template
COM	Defines the comment of the Session Wizard Template. The comment placed here, will be in view on the Session Wizard Control Screen
NCHANS	Defines the number of channels that will be used by the Session Wizard Template.
DO	Starts the Session Wizard Template.
DONE	Ends the Session Wizard Template.
//	Classifies a comment for the user. Use to place comments in your Session Wizard Template, with-out the Session Wizard seeing these comments.
BEGCYCLE	Begins an area to create a pre-defined cycle to be used in the DO section of the Session Wizard Template. The CYCLE is created outside of the DO Section.
ENDCYCLE	Ends an area to create a pre-defined cycle to be used in the DO section of the Session Wizard Template. The CYCLE is created outside of the DO section.
DOCYCLE	Used in the DO section of the Session Wizard Template. Calls to a pre-defined CYCLE with-in the Sessio Wizard Template.
Session Wizard Session Variables	
MESG1	Displays a message before the run begins.
MESG2	Displays a message after the run ends.
SITES	Programs the run for the specific locations that will be acquired/trained.
PERIOD	States how long the run will be
FEEDBACK	Variable that can be used for the Session Wizard Template. This value will only be kept for the period declared.

DUTY	Percentage Variable that controls the FEEDBACK variable. This allows FEEDBACK to be worth its stated value for the percentage of time of DUTY (If PERIOD is 30, FEEDBACK is 10, and DUTY is 50, then FEEDBACK=10
INTENSITY	Variable that can be used for the Session Wizard Template. This value will only be kept for the period declared.
Session Wizard Session Variables for Discovery	
EYES OPEN	Creates an EDF File with the EO mark when the PERIOD is complete.
EYES CLOSED	Creates an EDF File with the EC mark when the PERIOD is complete.
TASK	Creates an EDF File with the TASK mark when the PERIOD is complete. You will have to declare the Task for this.
Session Wizard Session Variables for Peripherals	
PHOTICRATE	Variable that sets the rate for Photic glasses to be used for the Session Wizard Template. This value will only be kept for the period declared.
PHOTICENABLE	Enable or Disable Photic Output. 1 Enables Photic Output. 0 Disables Photic Output.

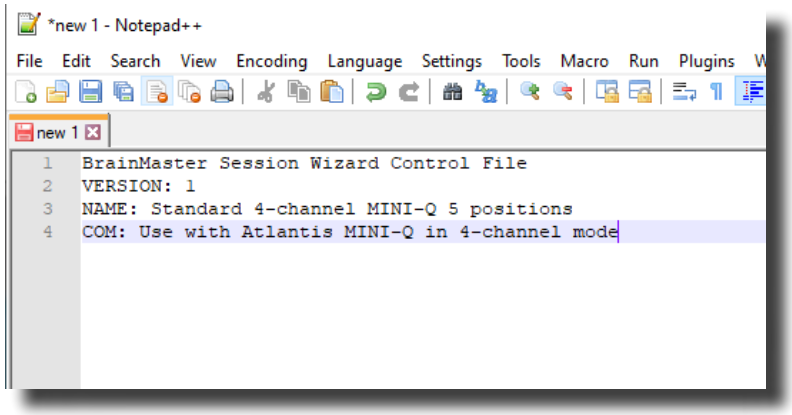
Designing a Session Wizard Template

***PLEASE NOTE:** A Session Wizard Template can be designed in any Notepad-based program. For this demonstration, Notepad++ is used. For more information on Notepad++, please visit http://notepad-plus-plus.org/.

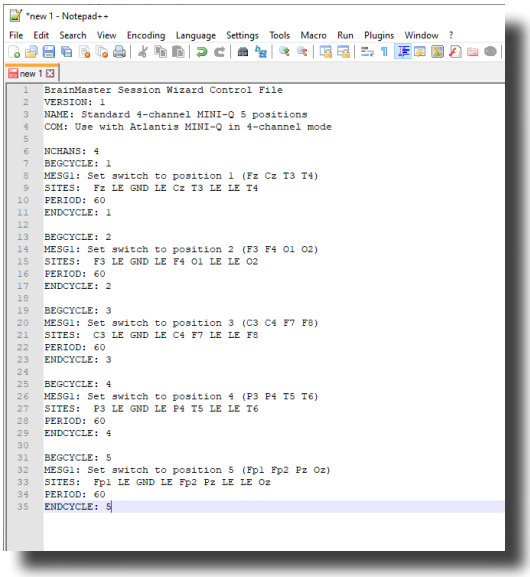
1. Open your Notepad-based program.



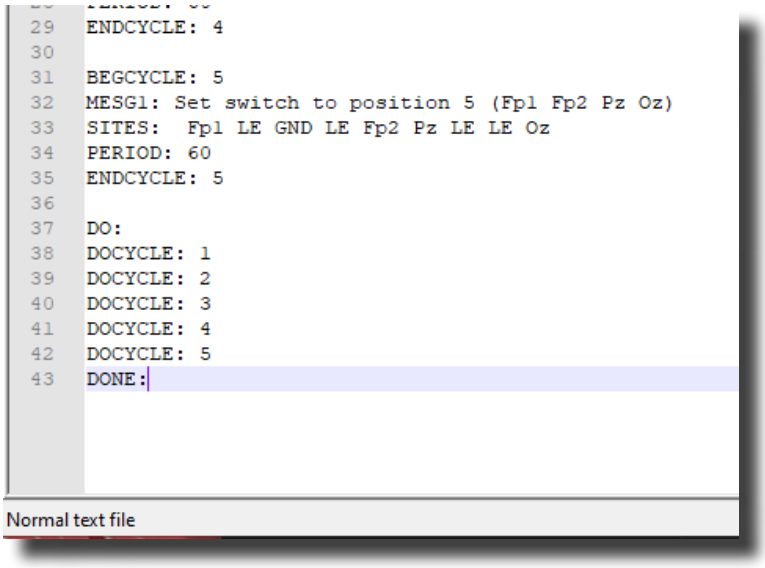
2. Create your Header information. The Header information will contain the Line “BrainMaster Session Wizard Control File”. It will also contain the Version, Name, Comment, and Number of channels.



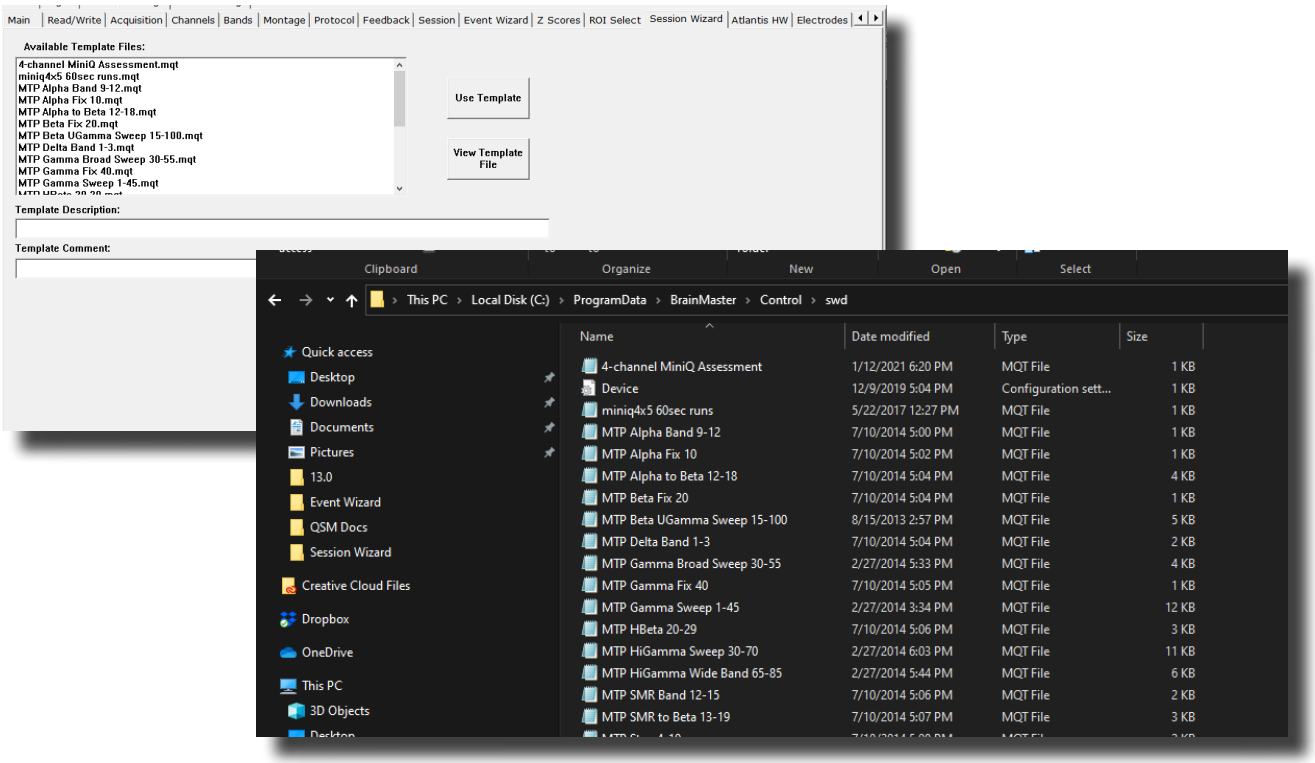
3. Next, define the number of Training Channels that will be controlled by the Session Wizard File, as well as create any cycles that will be used.



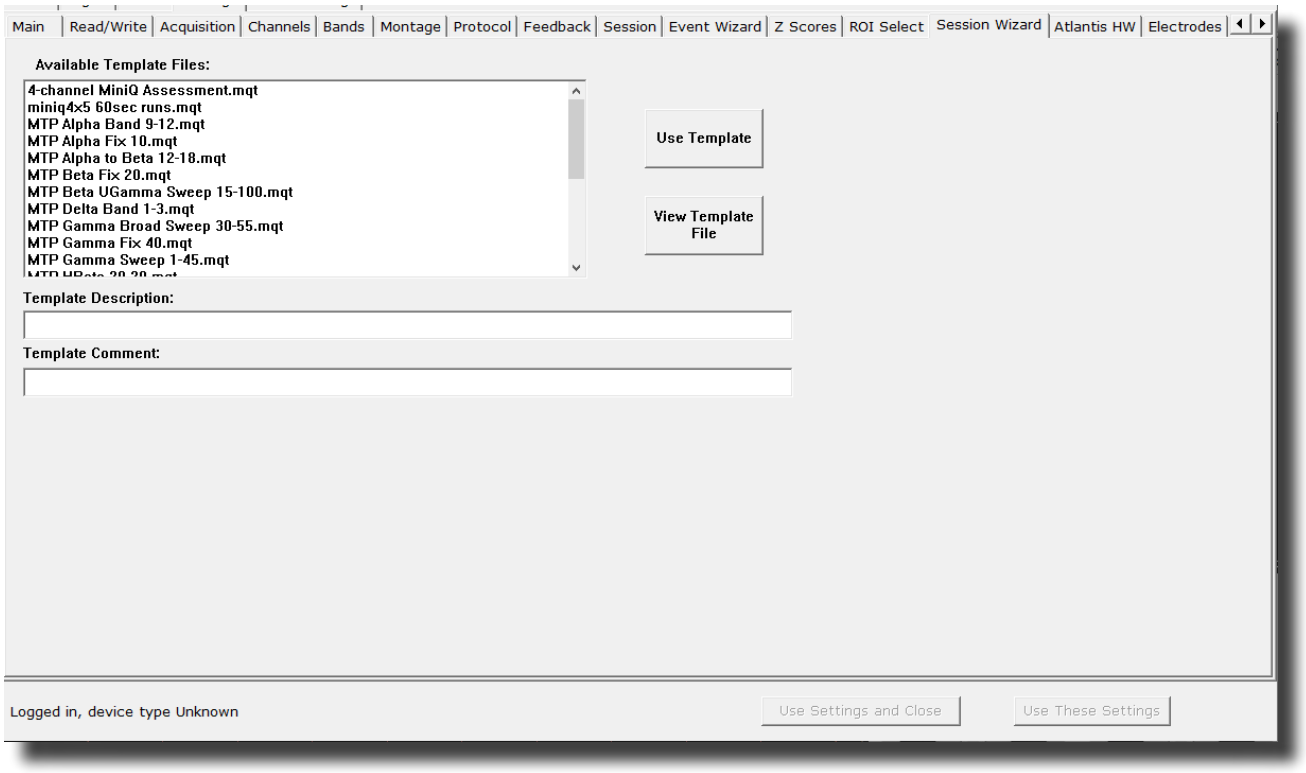
4. Now, create the DO section of the template section of the Session Wizard Template. All that is created in the DO section will control the session. When the DO section is completed, end with DONE.



5. When completed with you Session Wizard Template, it is now time to save it. The location that you will need to save this in for use is c:\ProgramData\BrainMaster\Settings as well as the c:\ ProgramData\BrainMaster\control\swd with the exact name that matches the Settings it will be used with for use in the BrainMaster BrainAvatar Software. You will save the file as "YourSessionWizardTemplateName".mqt. If you are using a Notepad program that allows this action, no further action will be required. If you are using a Notepad program that will not support this naming, you will have to force the .mqt ending in Windows manually.



You have now created a Session Wizard Template, that can now be used for future sessions. You will be able to tell that this has been completed, by opening the Session Wizard Control Screen, and seeing your newly created Session Wizard Template ready for use. Or, by simply choosing the protocol that matches it's name.



BrainMaster Products are manufactured by:
BrainMaster Technologies Inc.
195 Willis St.
Bedford, OH 44146
United States
1-440-232-6000

EC REP

European Representative:
mdi Europa GmbH
Langenhagener Straße 71
D-30855 Langenhagen

Phone: +49-511-39 08 95 30
Fax: +49-511-39 08 95 39
Email: info@mdi-europa.com
Internet: www.mdi-europa.com

REF 531-322 v2.1 2/4/2022