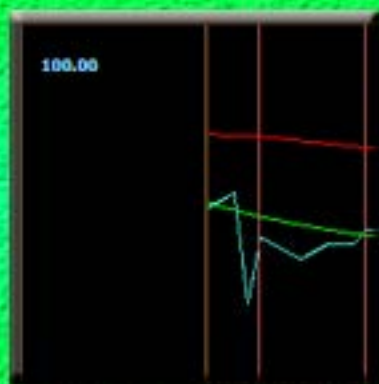


Power Point Manual

Get On The
BUS



BrainMaster
Universe
Simplified



~4ch PZOK
Atlantis
OEEGPRO~
Level 3

4chPZOK

Level 3

- The 4chPZOK Setting uses an absolute value (i.e. ± 2.0 SD's) to set the size of the window which includes all of the ZScores which are OK.
- Let's learn how to change the PZOK equation so that Upper and Lower limits of the ZScore window may be set specifically.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

FIRST: It is so very simple to make changes and experiment with BrainAvatar Settings Files without concern because if something just doesn't seem to work as planned, you always can reload the original Settings File you downloaded to your system.



All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

Consider manipulating the settings in your working folder as a sandbox. You can always replace it with the original setting file.



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4chPZOK

Level 2

Lets Begin

- Make Sure the Atlantis Amplifier is plugged in.

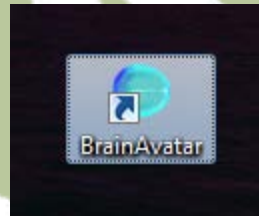


All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK for Atlantis

Level 3

- Open BrainAvatar by double-clicking the BrainAvatar Icon.

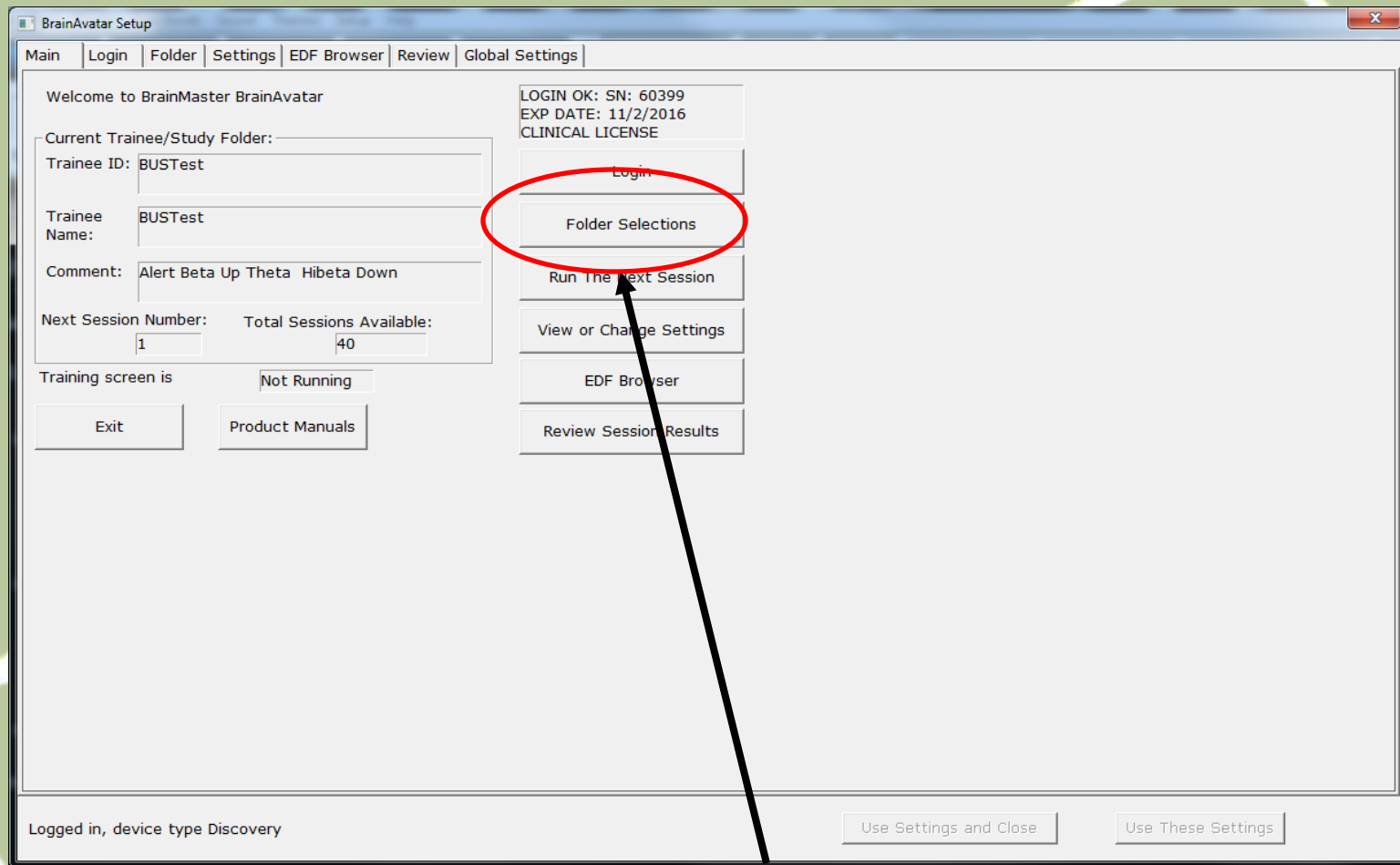


All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The Select Folder Screen will appear.
- By now you should know how to either create a new client folder or recall an existing client folder.
- For the purposes of this exercise let's open and utilize the "BUSTest" Folder which may already be resident on your system. If not, then create one.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The BrainAvatar Setup Window will Appear



- Click “Folder Selections”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- The Select Folder Screen will appear.

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Select Folder | Create Folder | Folder Notes | Session Librarian | Edit Folder Info.

Select Folder: (you may double-click to select)

Study Name	Birth Date	Sess	Max	Comment	Technician	Physician	Trainee Name	Created	Modified
..									
BUSTest	2000-7-4	40		Alert Beta Up T...	EEG tech		BUSTest	2016-8-3	2016-8-3

Study Name (Trainee ID): BroJad4chPZOKP3P4O1O2

Trainee Name: BroJad4chPZOKP3P4O1O2

Comment: comment

Sessions Used: 4

Max Sessions: 40

Session Librarian

Administer Session Genie | Push Current Study to Server and Delete | Archive Current Study | Archive Current Study and Delete

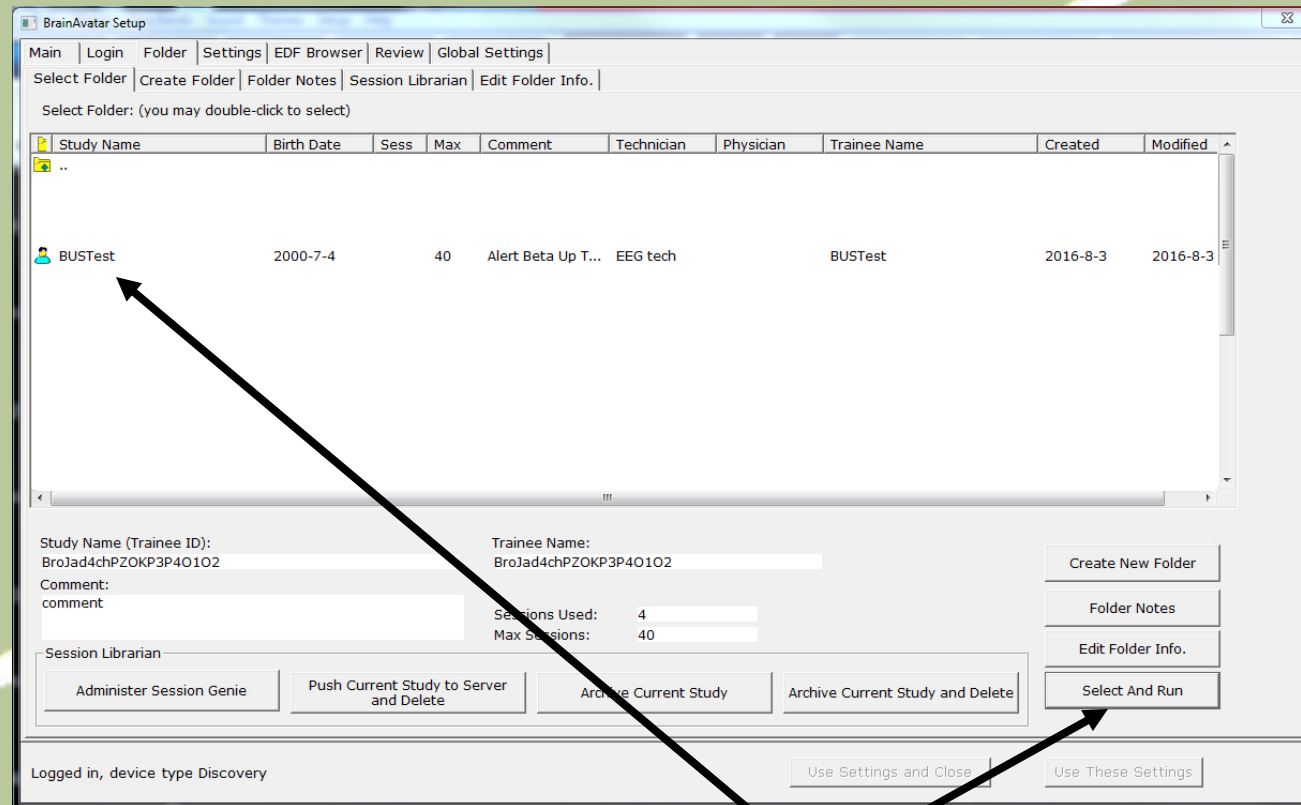
Create New Folder | Folder Notes | Edit Folder Info. | Select And Run

Logged in, device type Discovery

Use Settings and Close | Use These Settings

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

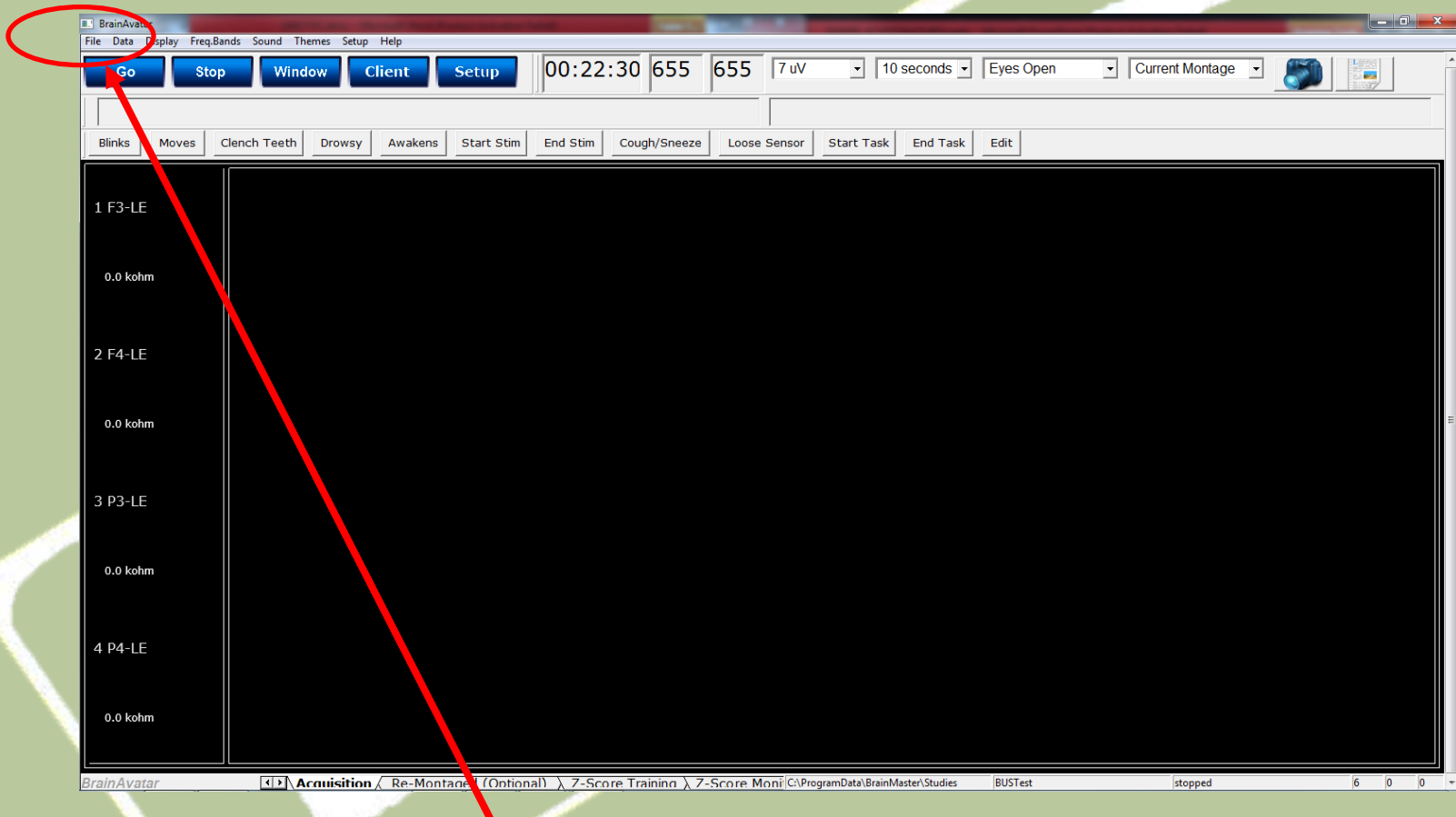
- The Select Folder Screen will appear.



- Click the Study (Folder) you would like to open (in this case BUSTest) and then click “Select and Run”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

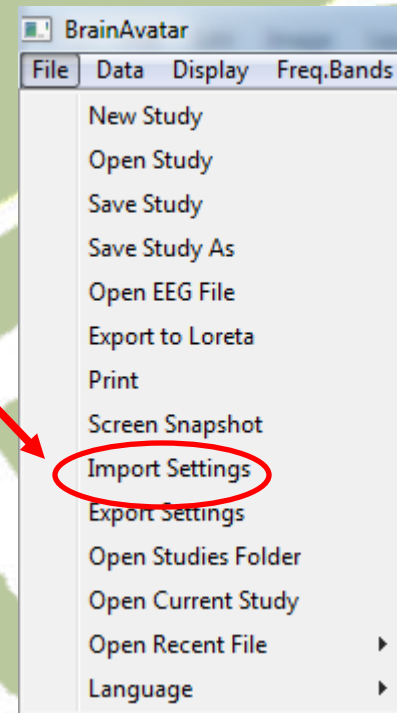
- The BrainAvatar Acquisition Screen is illuminated.
Let's load the original 4chPZOK Level 1 Setting File.



- Click “File” from the Main Menu at the top.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

- Next click “Import Settings”.



- Scroll to find the original PZOK Level 1 File and double click it.

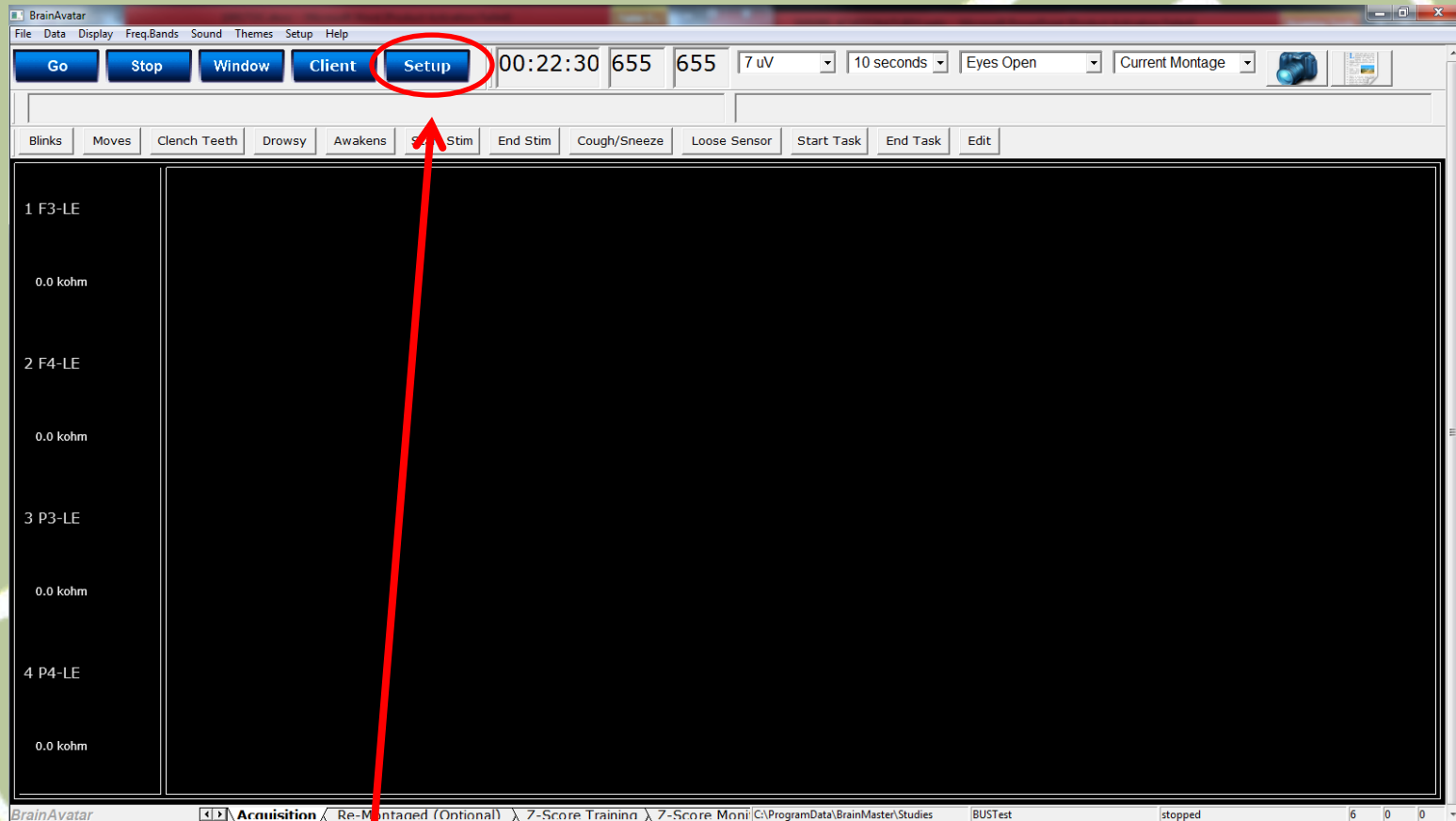
Name	Date modified	Type	Size
2101001_4ChPZOKATLBDX.bdb2	8/23/2016 5:01 PM	BDB2 File	166 KB

- The original PZOK Level 1 setting is imported into the Client’s Study and is now ready for modification.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK

The Protocol is now ready for Modification

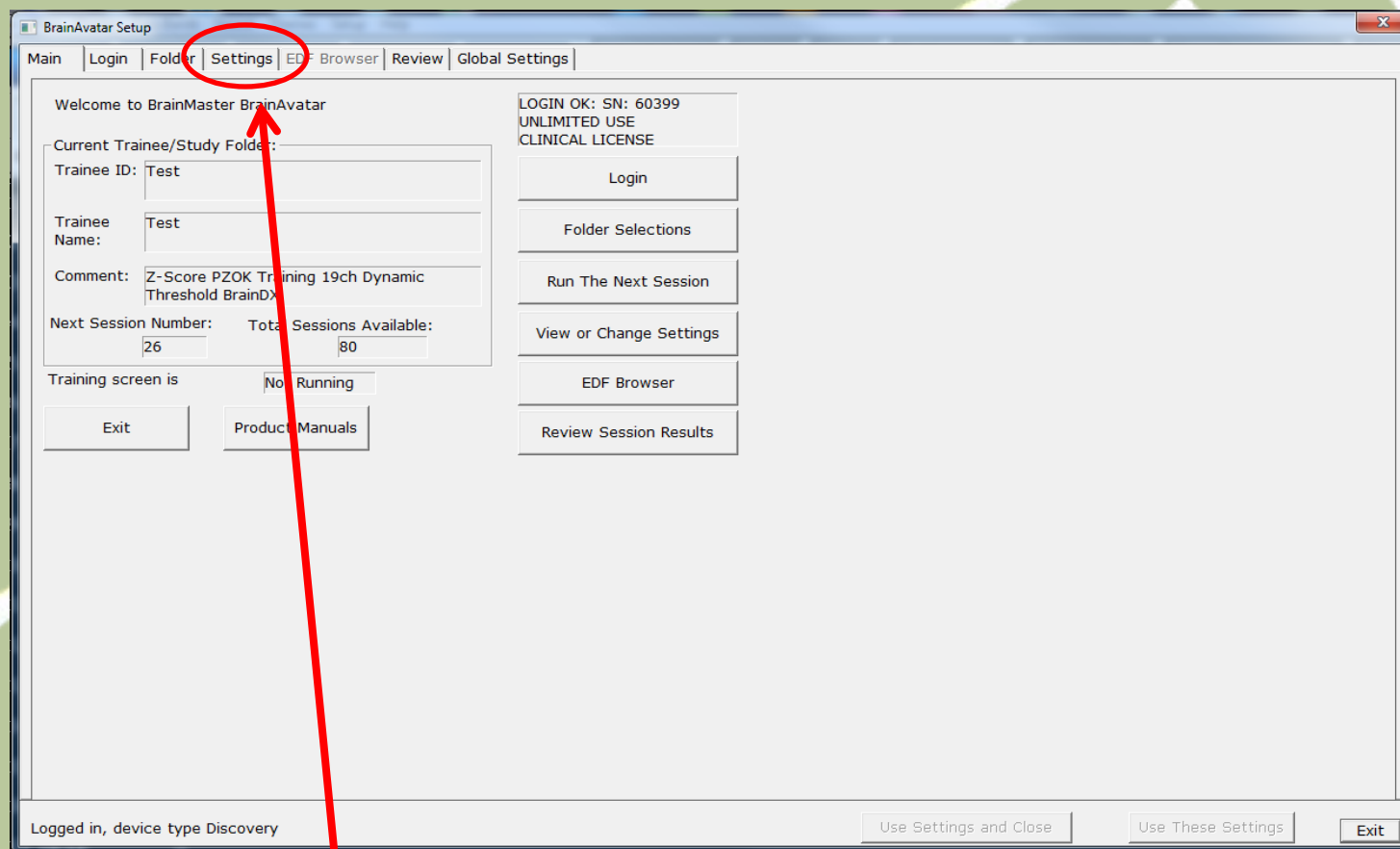


- Click “Setup”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK for Atlantis

The Protocol is now ready for Modification

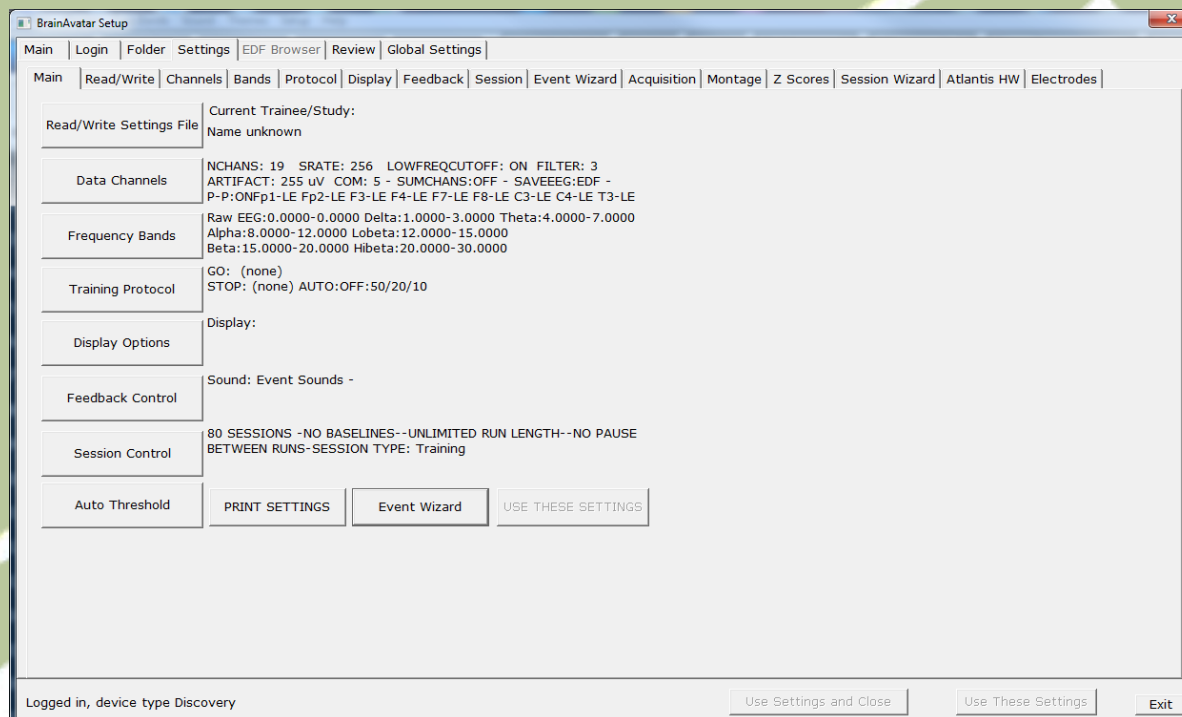


- Click “Settings”.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

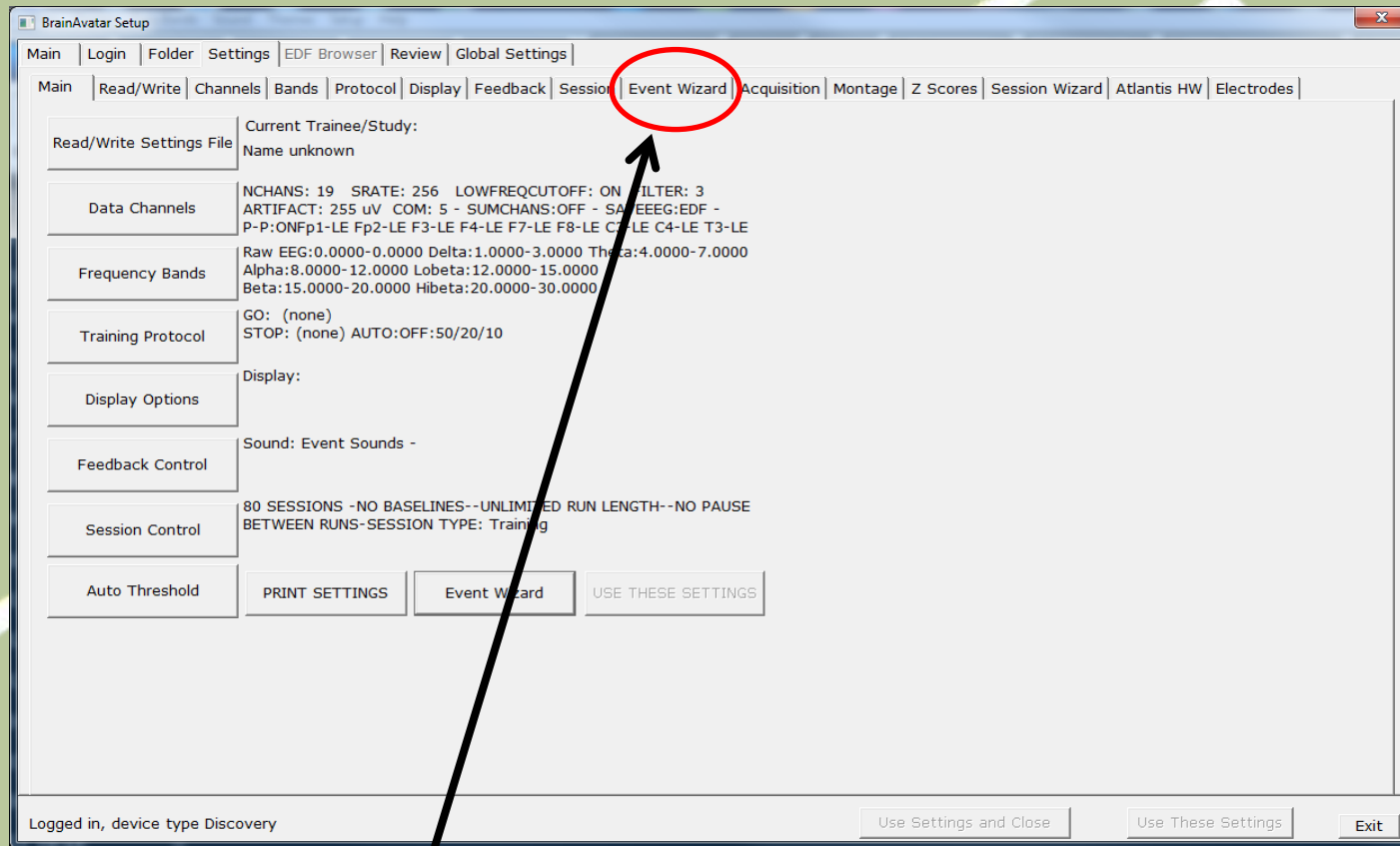


YOU ARE NOW ABOUT TO ENTER THE “BRAIN CENTER” OF THE BRAINAVATAR PROGRAM. ANY HAPHAZARD MODIFICATIONS HERE WITHOUT KNOWLEDGE MAY CAUSE UNPREDICTABLE RESULTS. THIS INSTRUCTION MANUAL WILL GIVE YOU THE PROPER KNOWLEDGE TO ALTER THESE CONTROL SCREENS WITHOUT CONCERN. AGAIN, YOU CAN ALWAYS INSTALL THE ORIGINAL SETTING FILE IF NECESSARY.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK for Atlantis

The Protocol is now ready for Modification

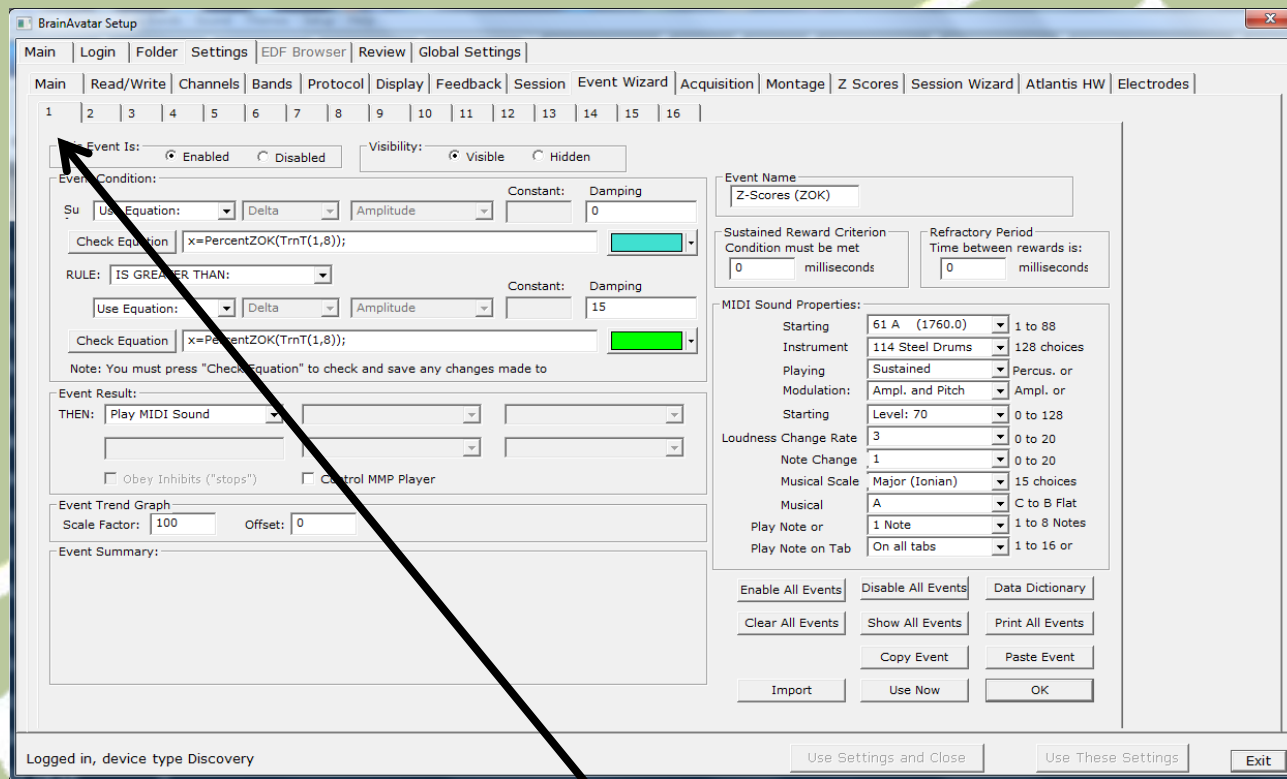


Click “Event Wizard”.

All protocols are for demo and research purposes only. Clinicians must determine protocol choices. All protocols must be used within scope of practice and scope of competence.

4chPZOK for Atlantis

The Protocol is now ready for Modification

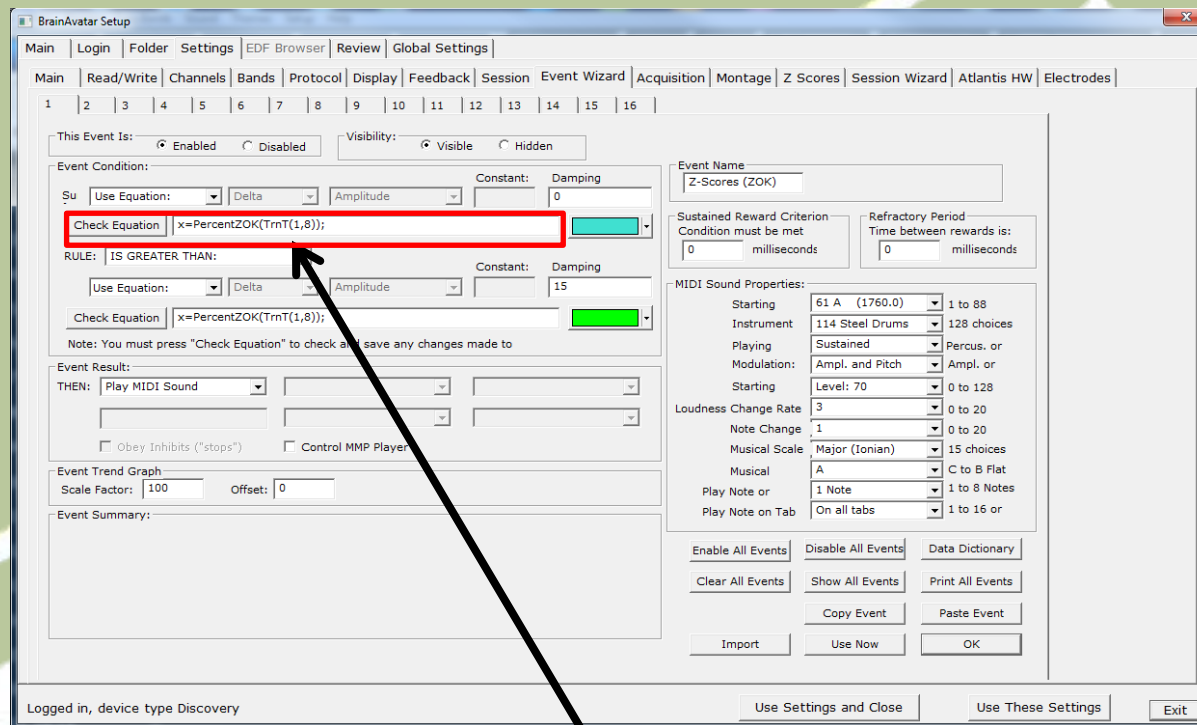


This is the Event Wizard which is the control center which makes the Protocol run. The formula in “Event 1” is the one which operates PZOK.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

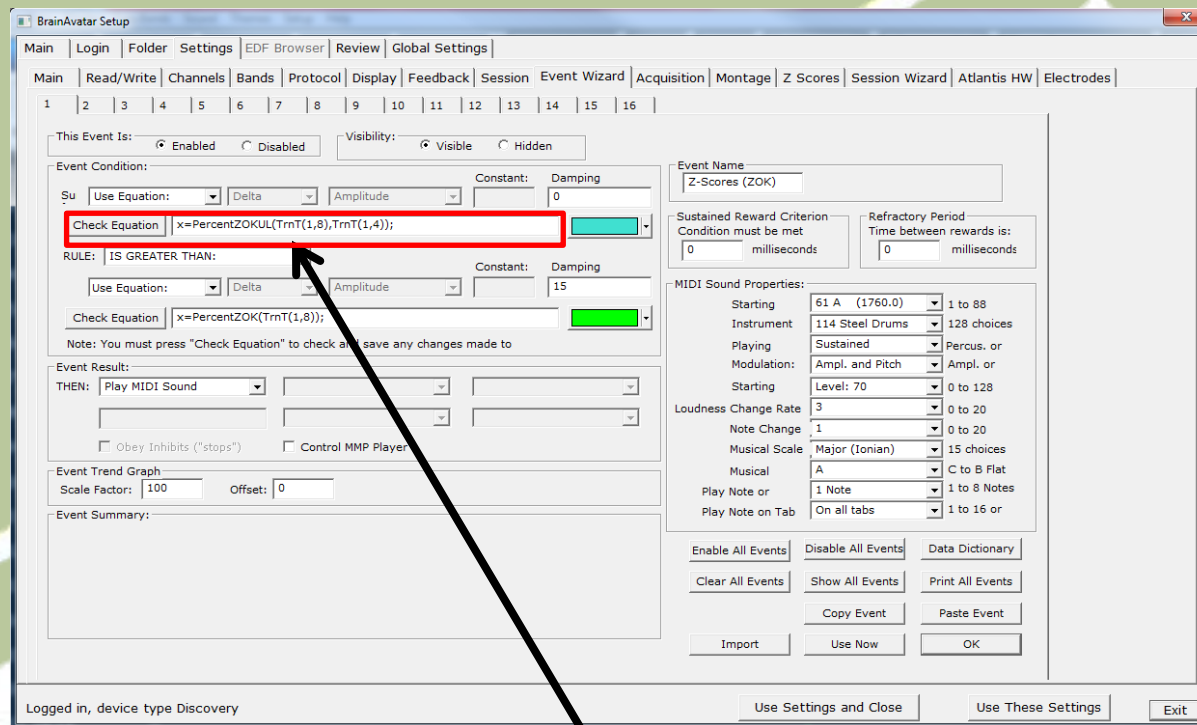


Let's interpret the line "Check Equation $x = \text{PercentZOK}(\text{TrnT}(1,8));$ ". This formula utilizes the PercentZOK algorithm of the BrainAvatar Program. TrnT(1,8) stands for the Training Threshold of (channel 1), "The Cap" or all 19 channels of the "User Band" 8 which utilizes the "User Key" or "u" key for short to modify the size of the window which will include all of the ZScores that are OK (non-outliers).

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4chPZOK for Atlantis

The Protocol is now ready for Modification

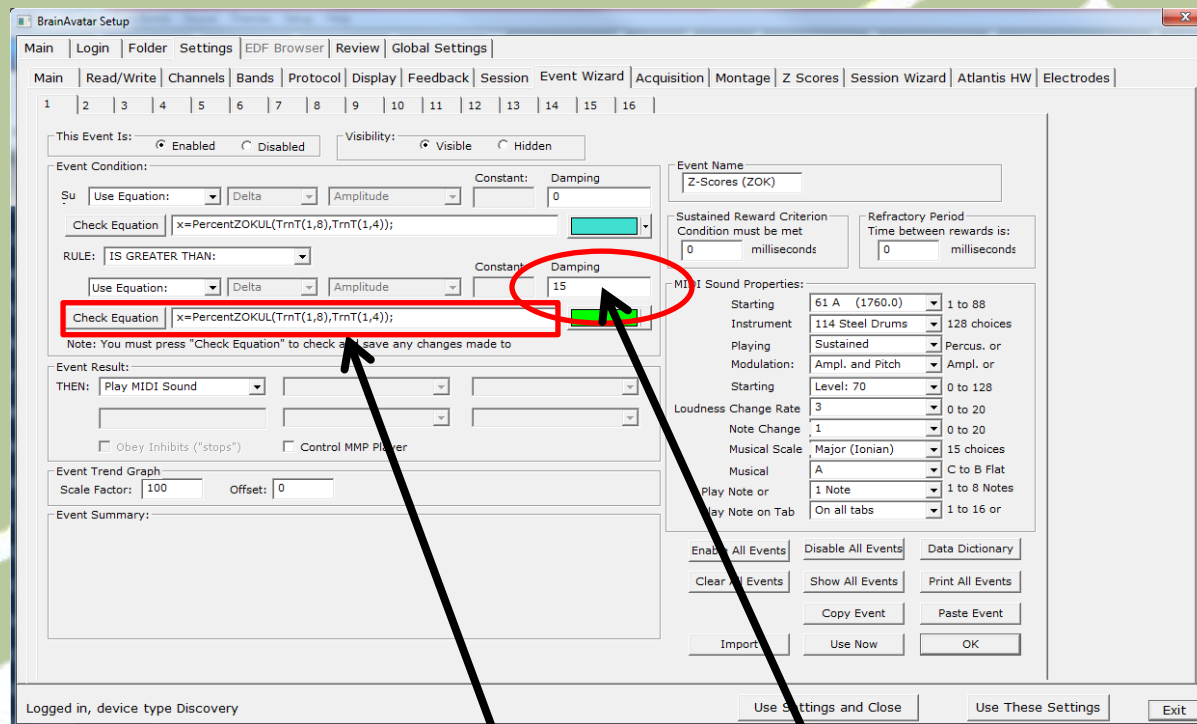


In order to add a lower limit to the equation all we have to do is change the equation from $x=\text{PercentZOK}(\text{TrnT}(1,8));$ to $x=\text{PercentZOKUL}(\text{TrnT}(1,8),(\text{TrnT}(1,4))$ where the UL informs the program that there is an upper and lower limit and the second part $\text{TrnT}(1,4)$ informs the program that the Training Threshold for channel 1 band 4 which is the Lobeta band will use the “L” key to control the lower limit of the PZOK window.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

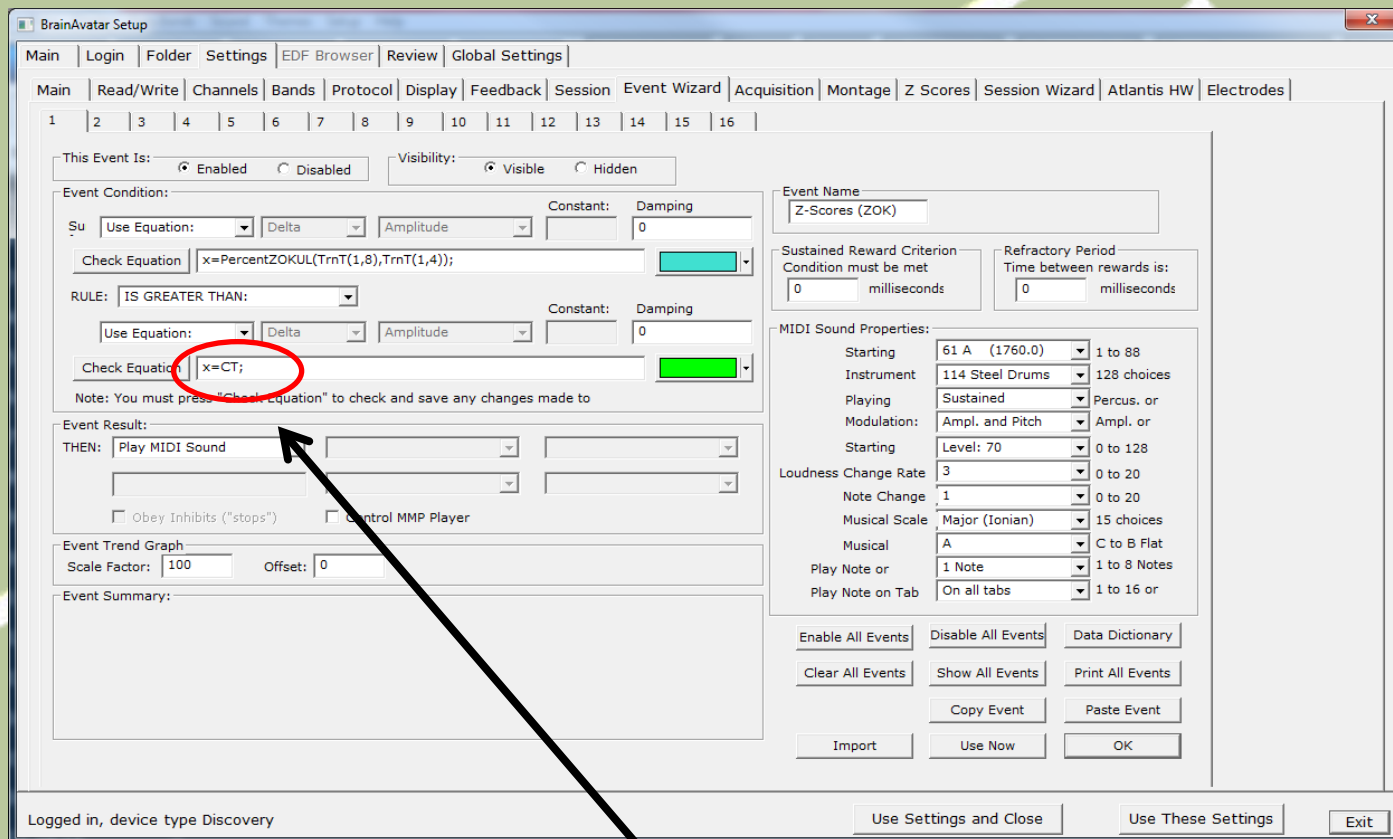


We would copy the equation into the following line in order to utilize dynamic thresholding, also remembering to place a damping factor of 15 so the threshold lags behind the actual PZOK (Blue Line).

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4chPZOK for Atlantis

The Protocol is now ready for Modification

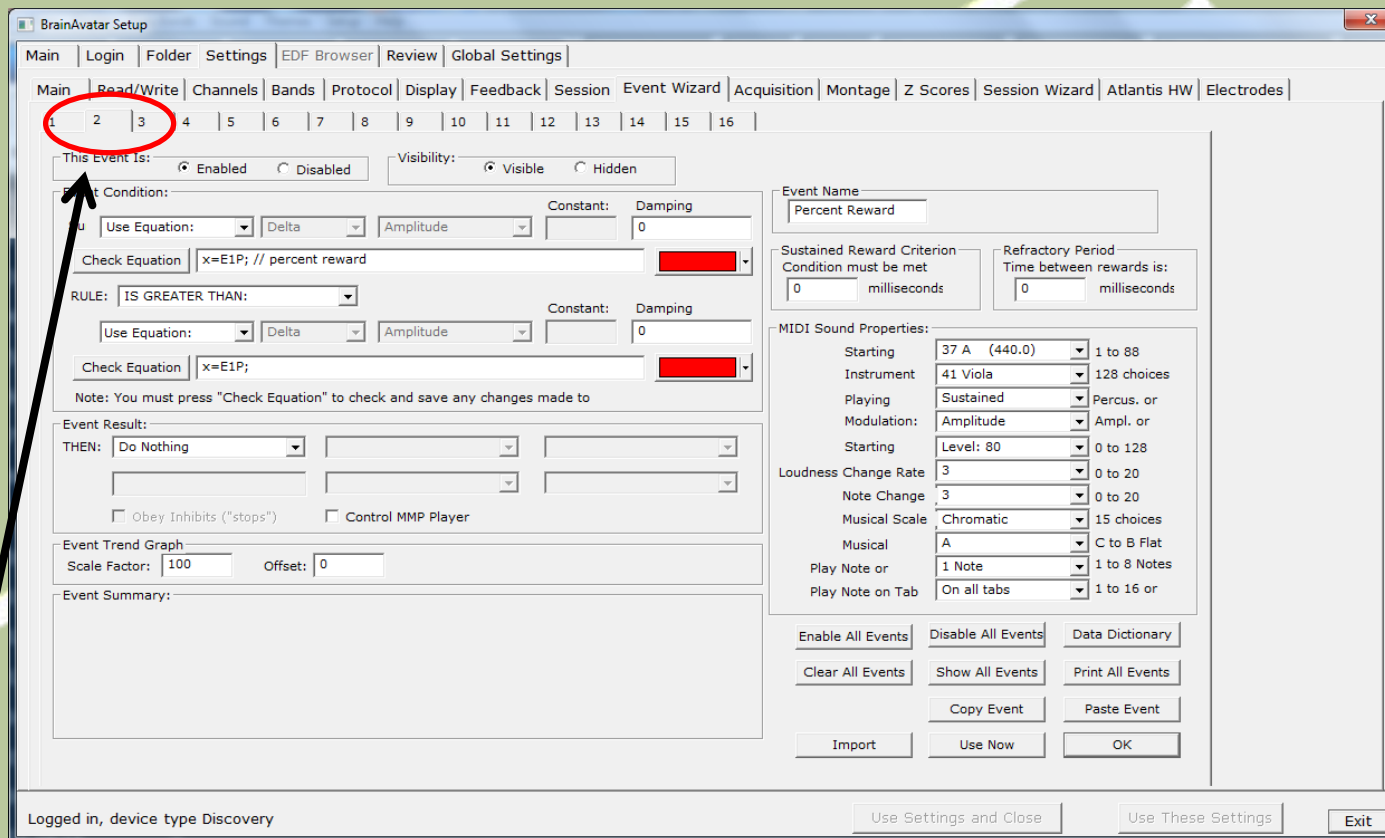


If you would like to utilize Manual Thresholding substitute the equation $x=CT;$ for the Dynamic Thresholding equation. CT activates the “c” key to control a manual threshold. Also, replace the damping factor of 15 to 0. Let’s use manual thresholding for our example.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

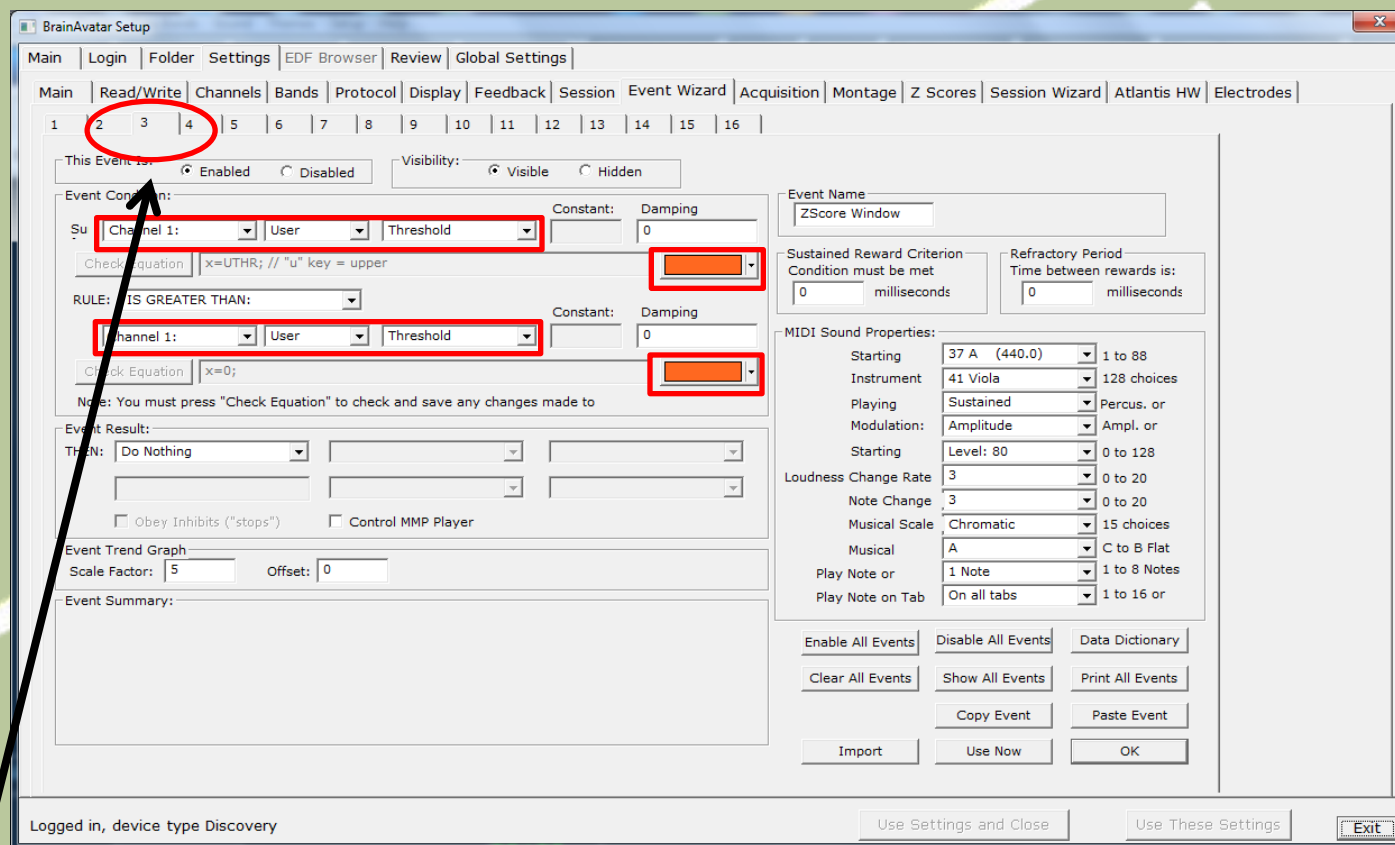


Event 2 contains the formula which operates the percent reward (Red Line). The formula is “x=E1P” which produces the percent reward which is graphed by the red line.

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4chPZOK for Atlantis

The Protocol is now ready for Modification



Event 3 was set up originally to control the upper and the lower limit of the PZOK window. Because we changed the formula in Event 1, it now only controls the Upper limit of the window. Notice it utilizes the “u” key to control the upper limit.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Su: Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=LTHR; // "I" key = lower

RULE: IS GREATER THAN: Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=UTHR;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Do Nothing

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 100 Offset: 0

Event Summary:

MIDI Sound Properties:

Starting 37 A (440.0) 1 to 88

Instrument 41 Viola 128 choices

Playing Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting Level: 80 0 to 128

Loudness Change Rate 3 0 to 20

Note Change 3 0 to 20

Musical Scale Chromatic 15 choices

Musical A C to B Flat

Play Note or 1 Note 1 to 8 Notes

Play Note on Tab On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Logged in, device type Discovery

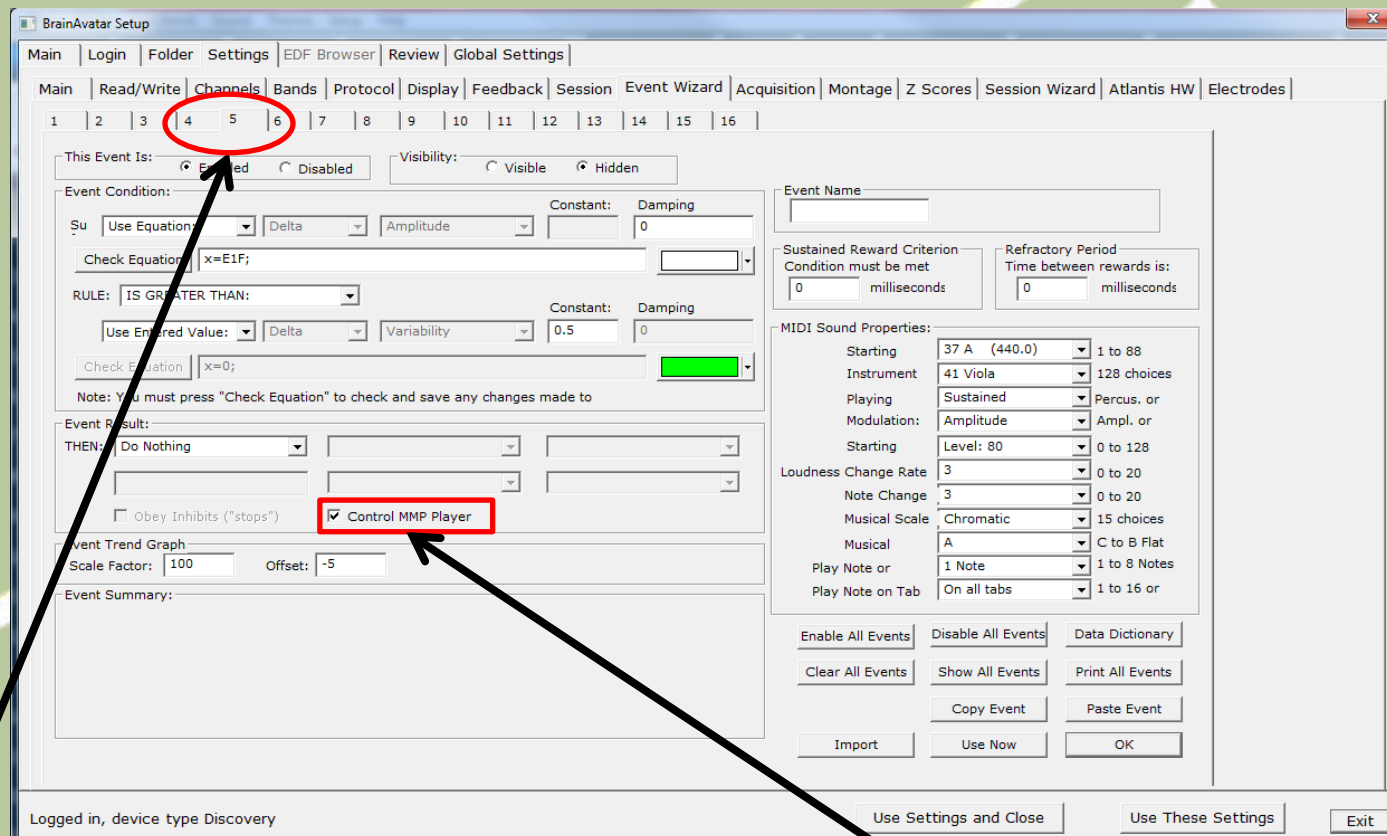
Use Settings and Close Use These Settings Exit

Event 4 was not utilized. Let's make the changes as shown in the red boxes above. Now, the Lobeta Threshold will actually control the Lower Limit of the PZOK Window. It does this because we are in ZScore mode and there really is not a LoBeta Threshold involved in this mode. This makes the "L" key available for this control.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

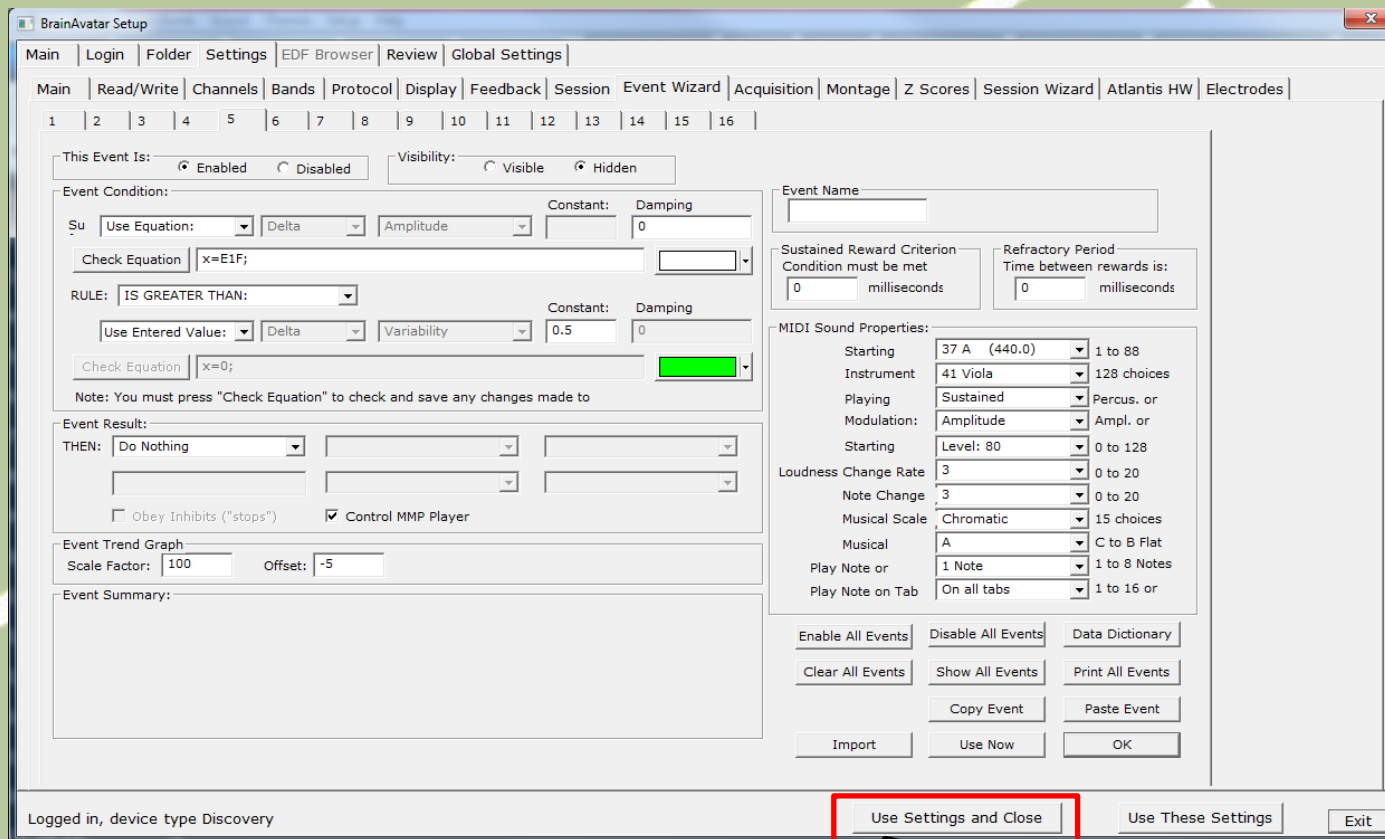


Event 5 operates the flash games by utilizing the formula $X=E1F$; E1F is designated as a flag. Flags simply return a 1 if a statement is true and a 0 if a statement is false. In this case E1F refers to Event 1 which states if the PZOK is above the threshold return a 1 (advance the game) and if not it returns a 0 which means halt the game. Notice in Event 5 there is a check in the box preceding "Control MMP Player".

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4chPZOK for Atlantis

The Protocol is now ready for Modification

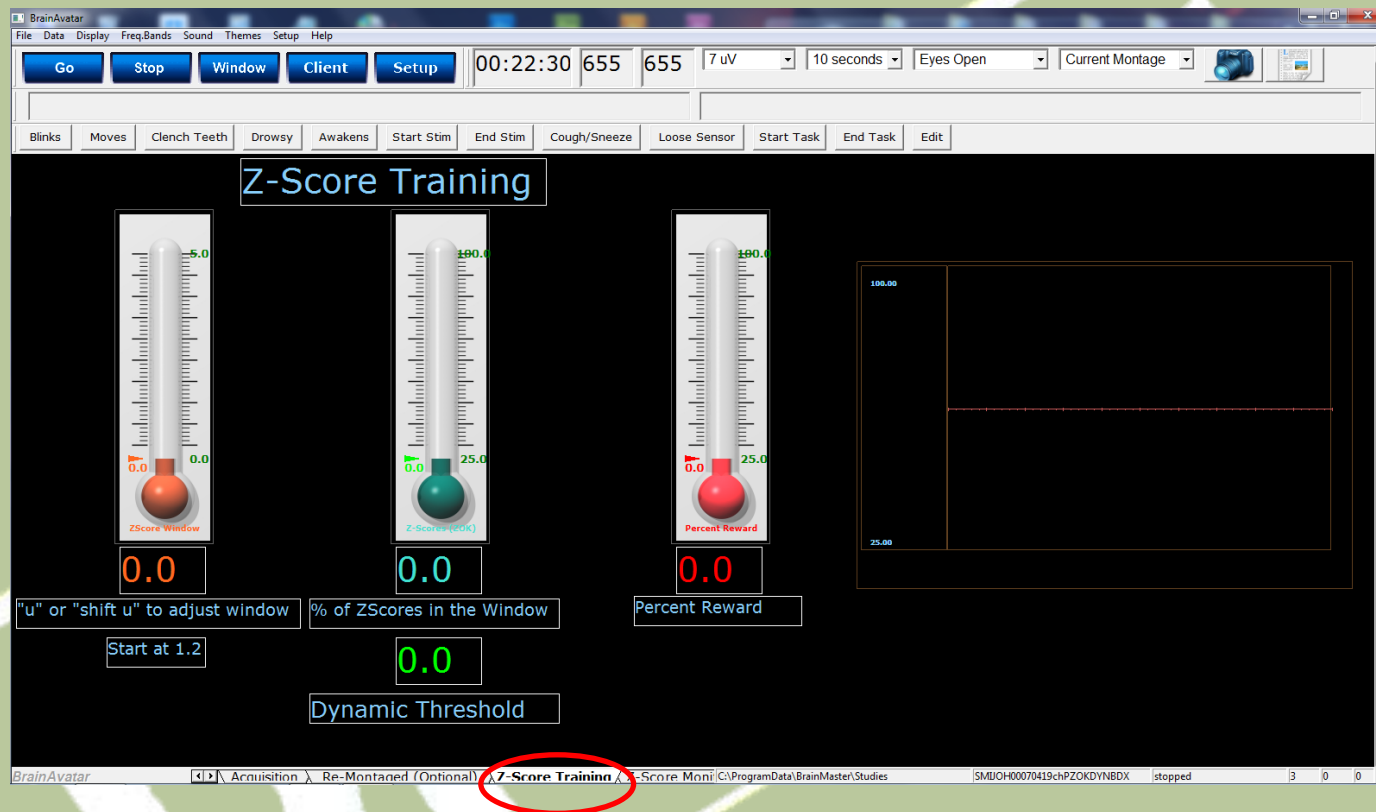


After these changes have been made click “Use Settings and Close” to save all changes.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

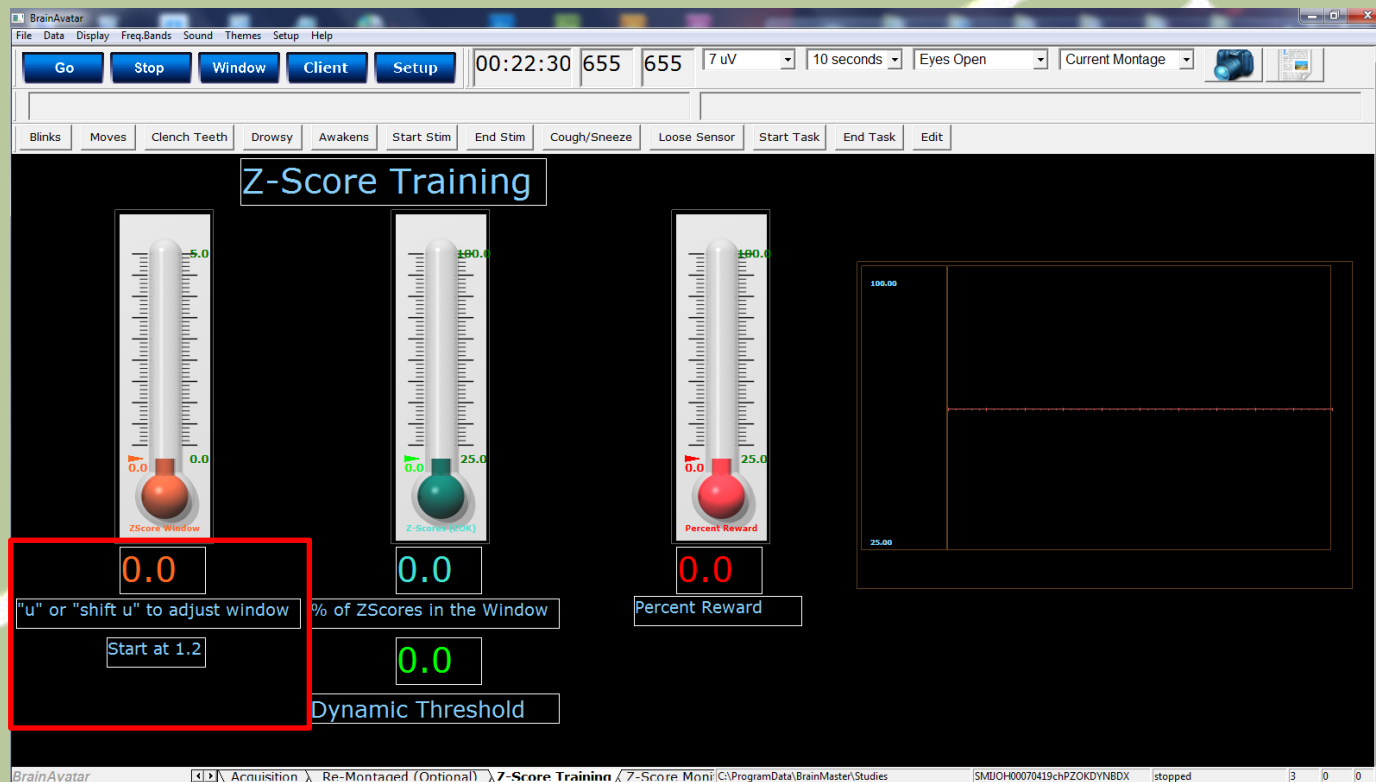


Next, we should modify the Training Screen so we can utilize the upper and lower limits of the PZOK Window. Switch to the ZScore training tab. In order to make changes to the training screen we use the Panel Wizard. There is a general instruction tutorial on using the Panel Wizard in this section. However, you may review that at a later time. All you will need for this modification is included here.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

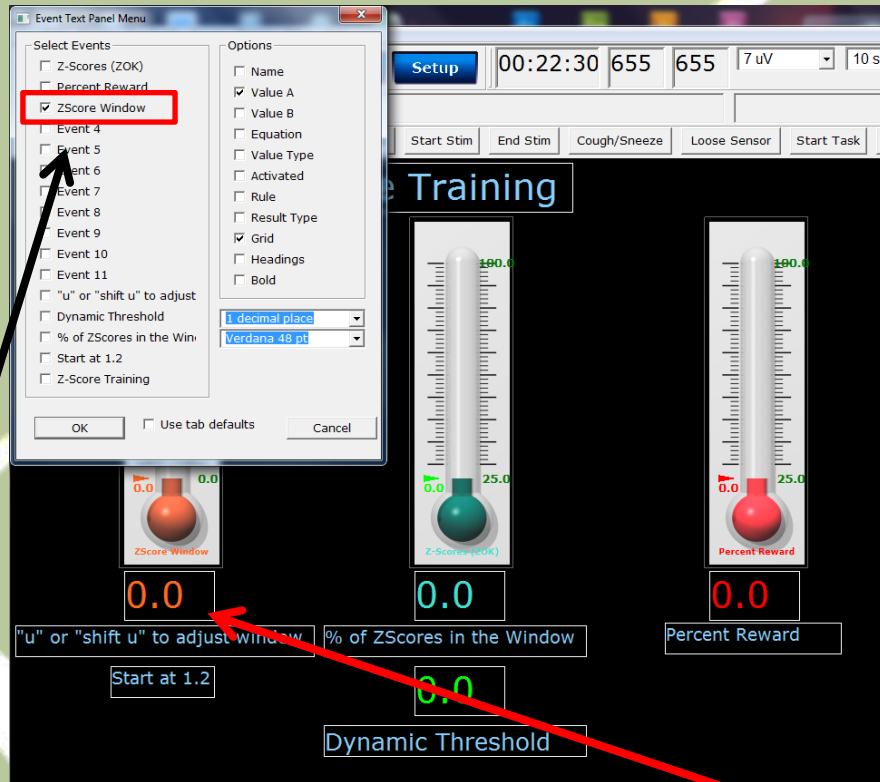


The area under the red rectangle is the area which controls the size of the PZOK Window. Previously, it was controlled by a single key, the “u” key which adjusted both the upper and lower limits of the PZOK window using an absolute value of the standard deviations as controlled by Event 1. We have changed Event 1 to individually control upper and lower window limits. Now we have to make the changes to our Training Screen.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

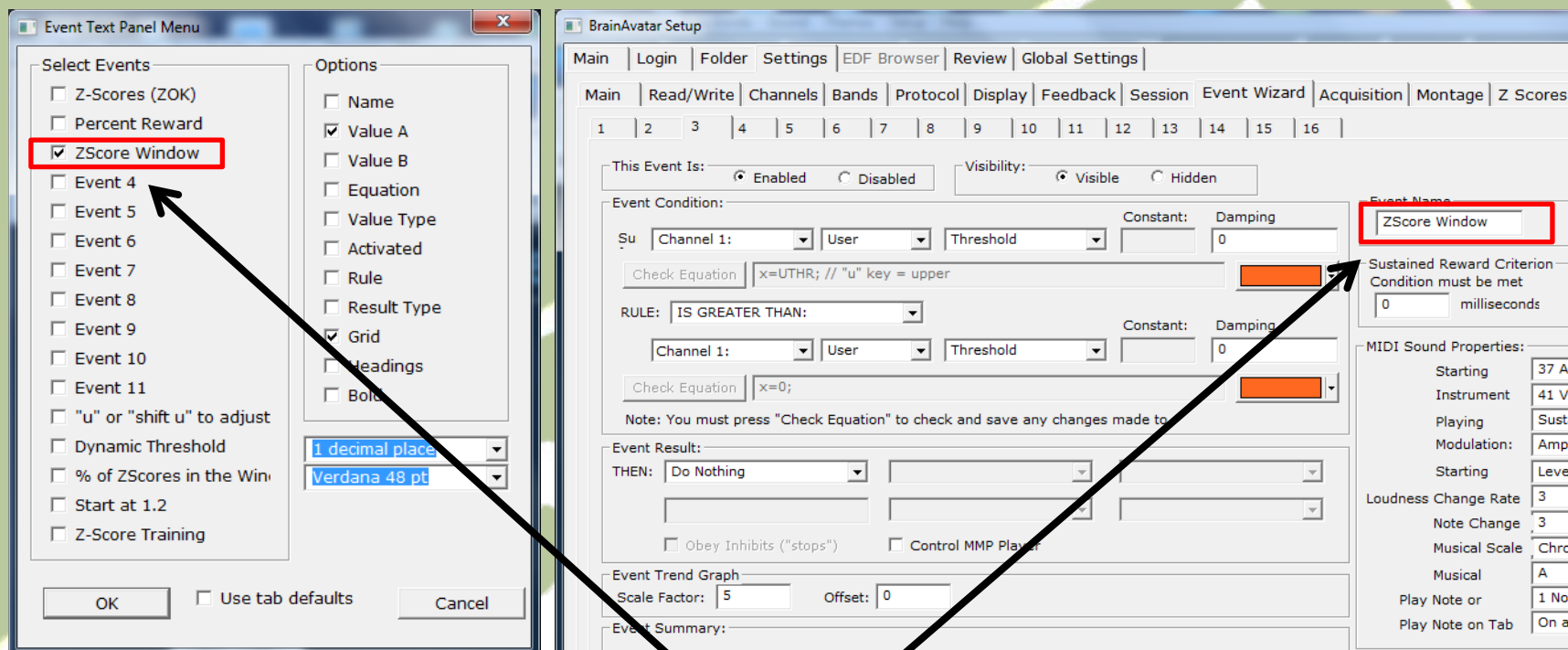


When you “Right-Click” the mouse in the box with the orange numbers a popup entitled “Event Text Panel Menu” appears. Notice the 3rd box down is checked.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

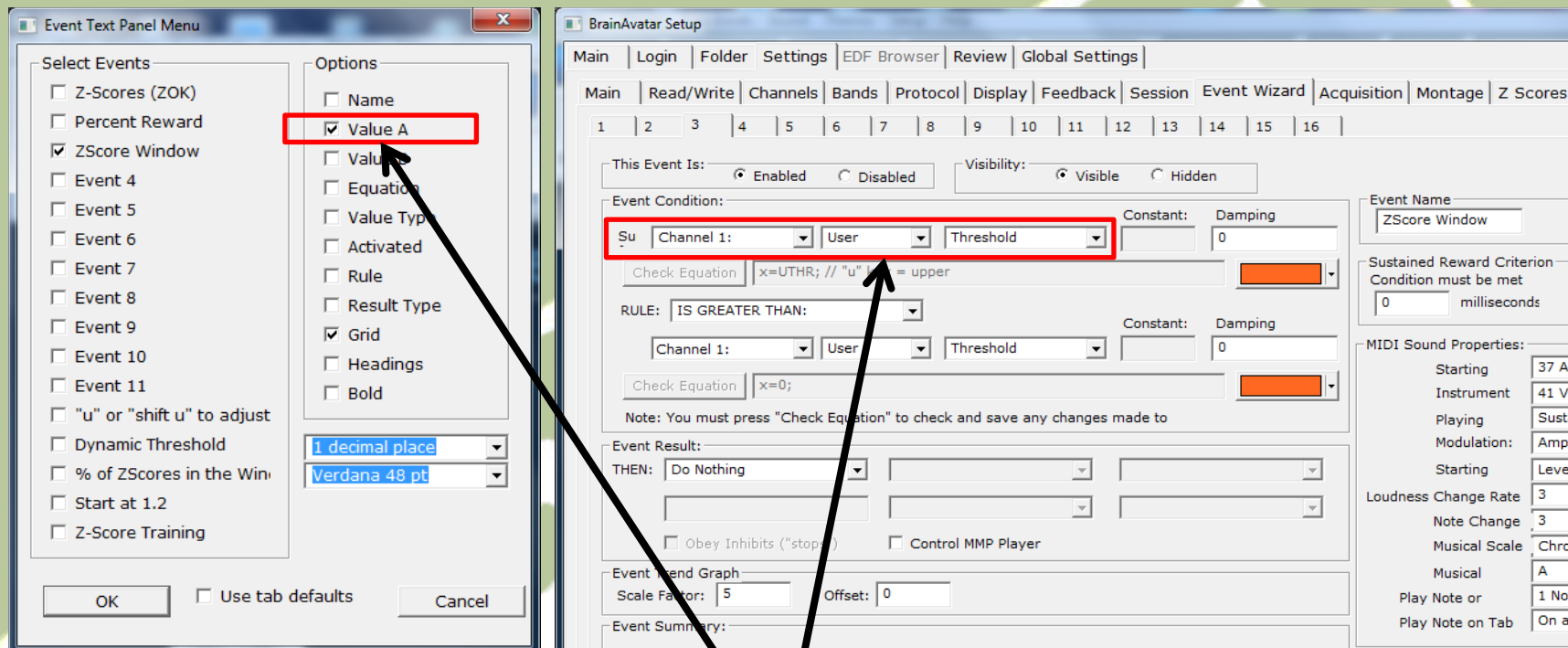


If we relate this 3rd box to the 3rd event in the event wizard you will notice the Event Name is “ZScore Window”.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

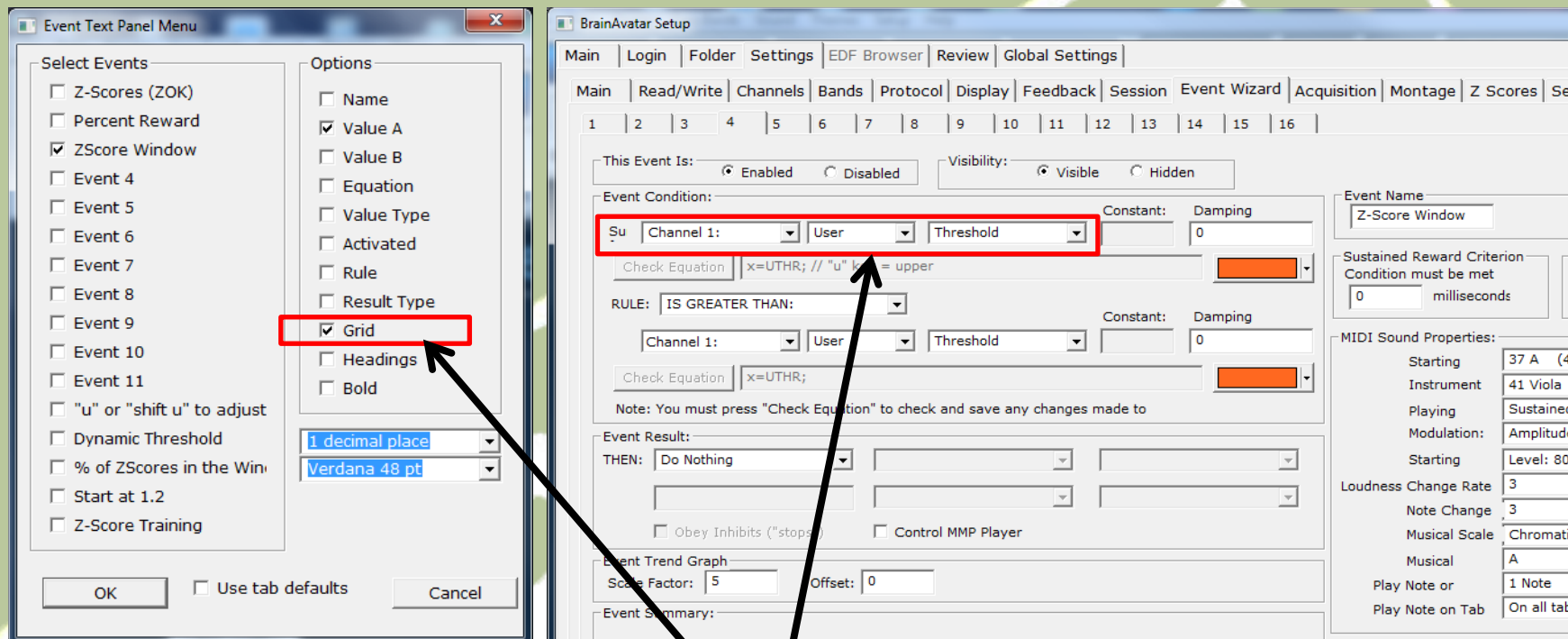


We are showing the Value of Box A.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

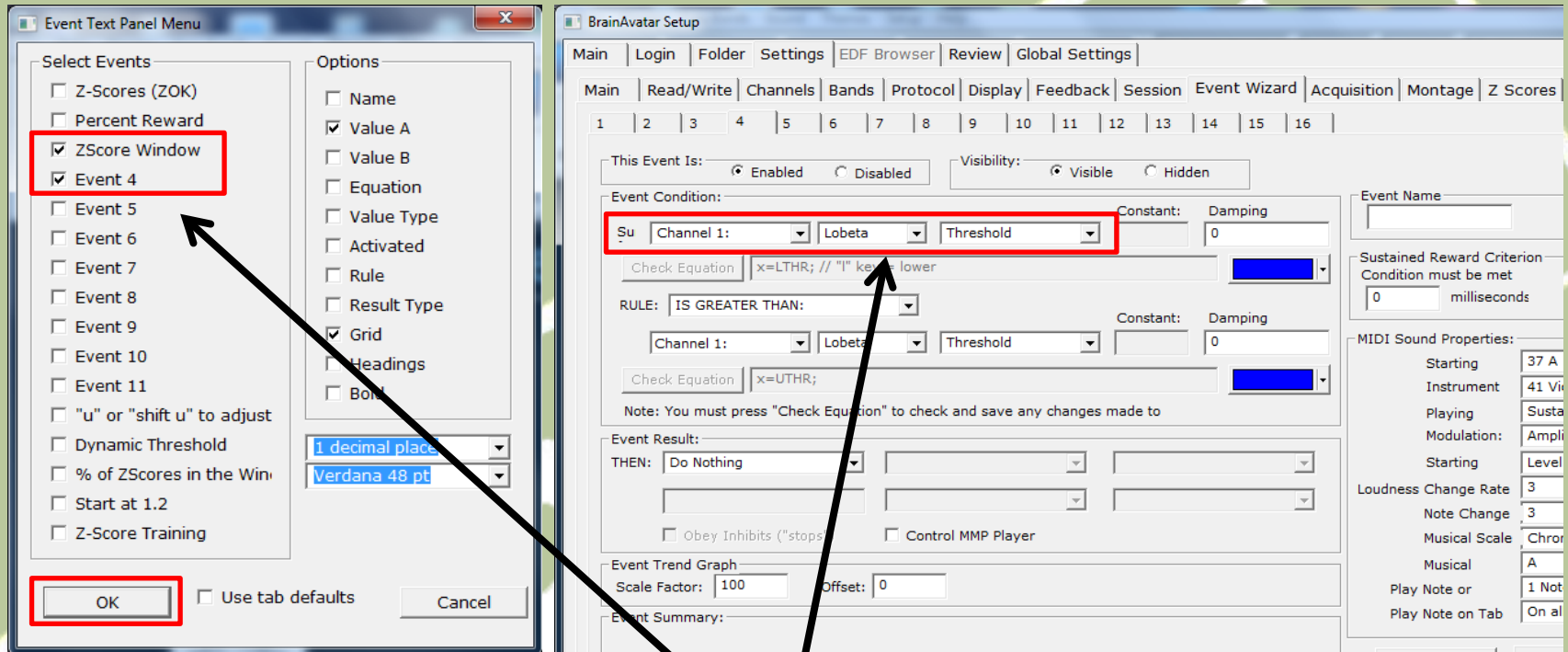


And we are encasing the Value of Box A in a Grid or a Box on the Training Screen.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

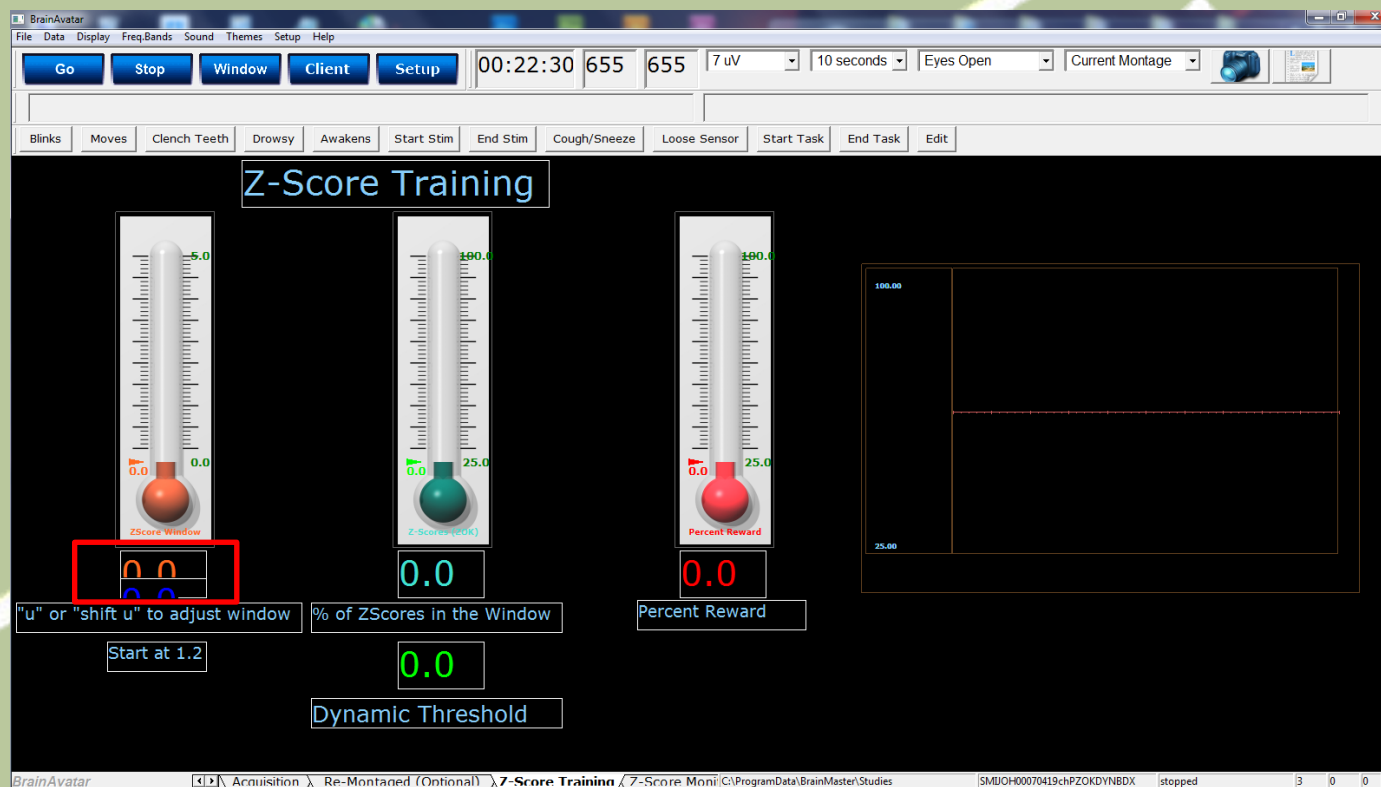


Perhaps all we would need to do to include a lower limit meter would be to check event 4 along with event 3. After you do, click “OK” to save changes.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

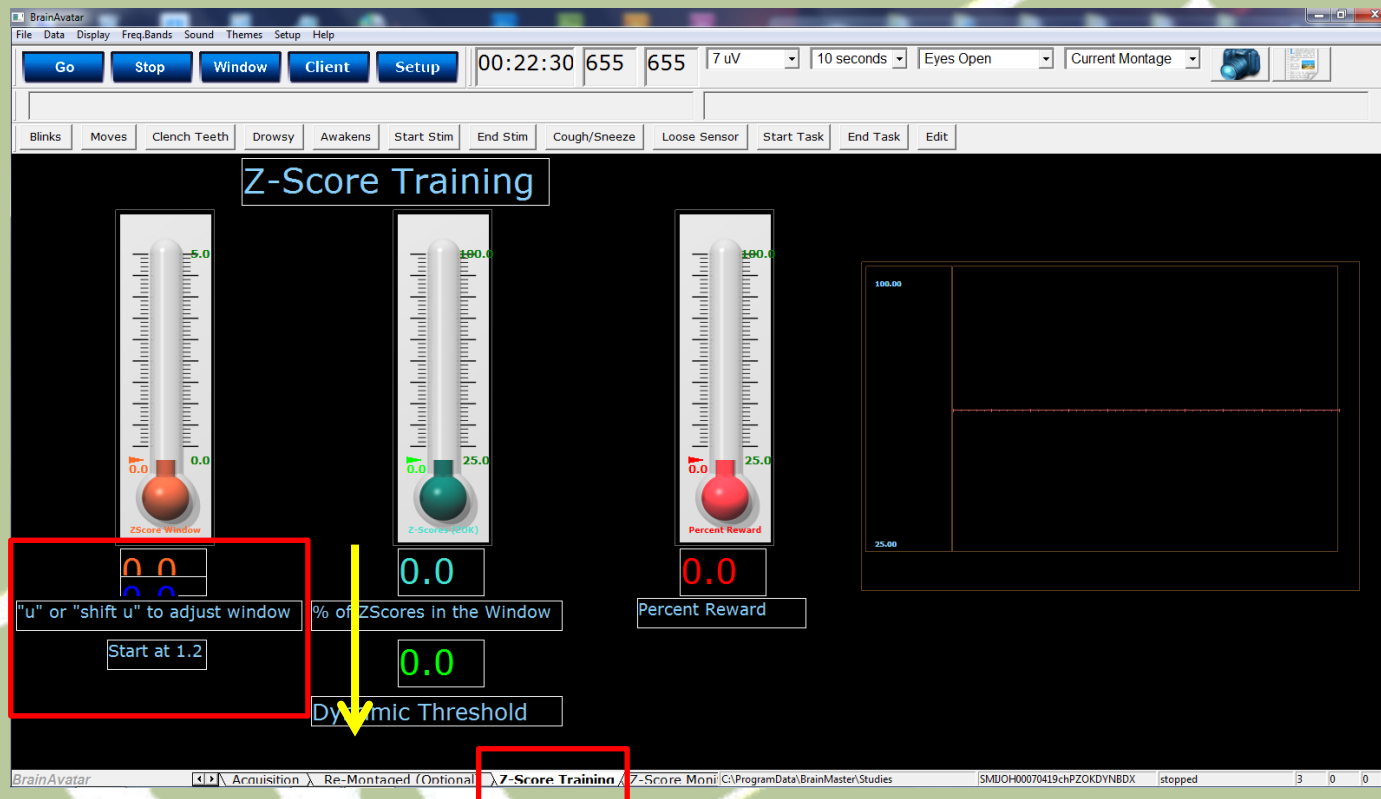


Oooooops! Notice what happened. We now have two meters trying to fit into the space of one. The program is doing exactly what we asked it to do! We have to now double the size of the occupied space to accommodate 2 meters.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

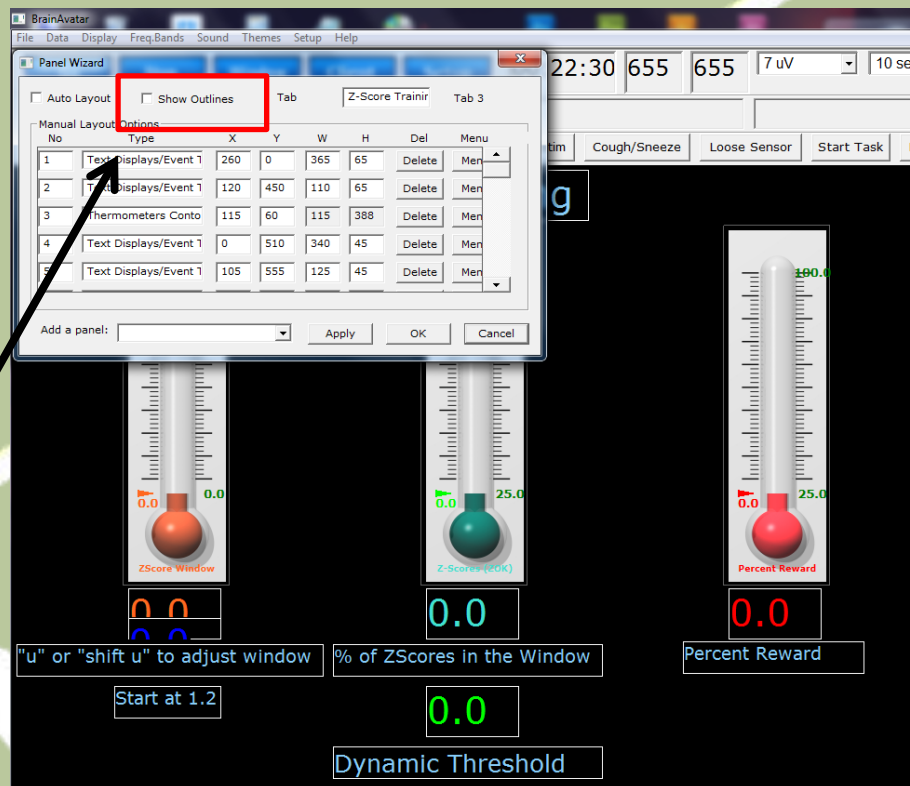


We will also have to move the labels down so that everything fits. BrainAvatar has made this so very easy to do. We must now access the “Panel Wizard”. We do this by “Right-Clicking” the current panel which in this case is the “Z-Score Training” Panel.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

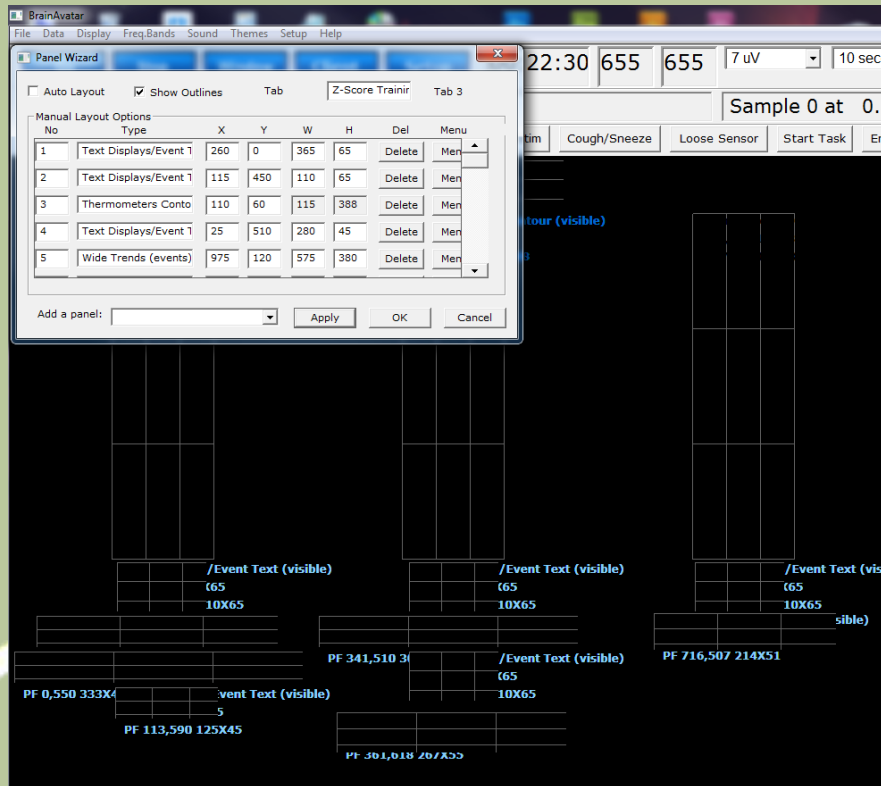


The easiest way to move things on the screen is by clicking “show outlines”. Click the “Show Outlines” checkbox near the top of the Panel Wizard.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

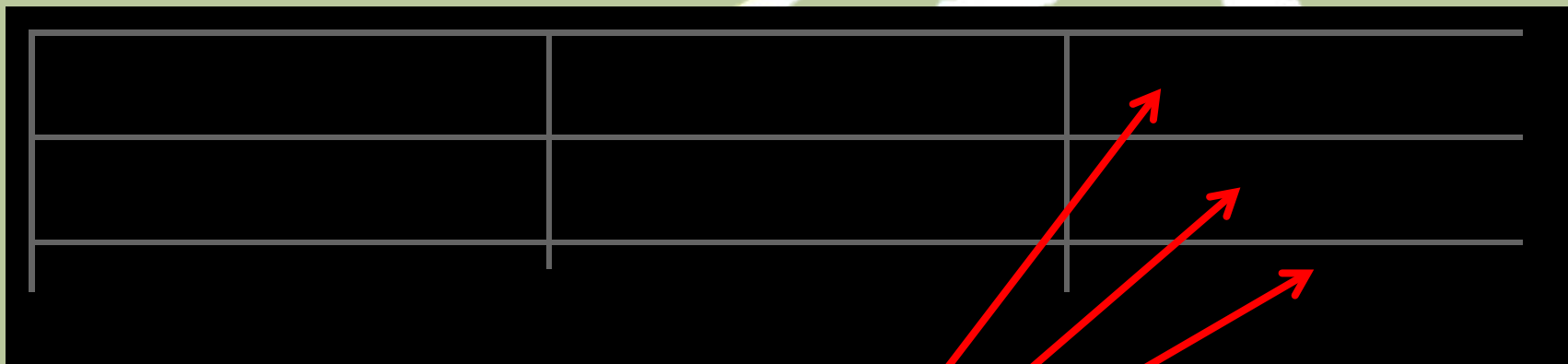


Notice, all of a sudden, each image on the screen has been converted to a wireframe containing a 3 x 3 grid. The center and left three grids move the entire image without changing its shape.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

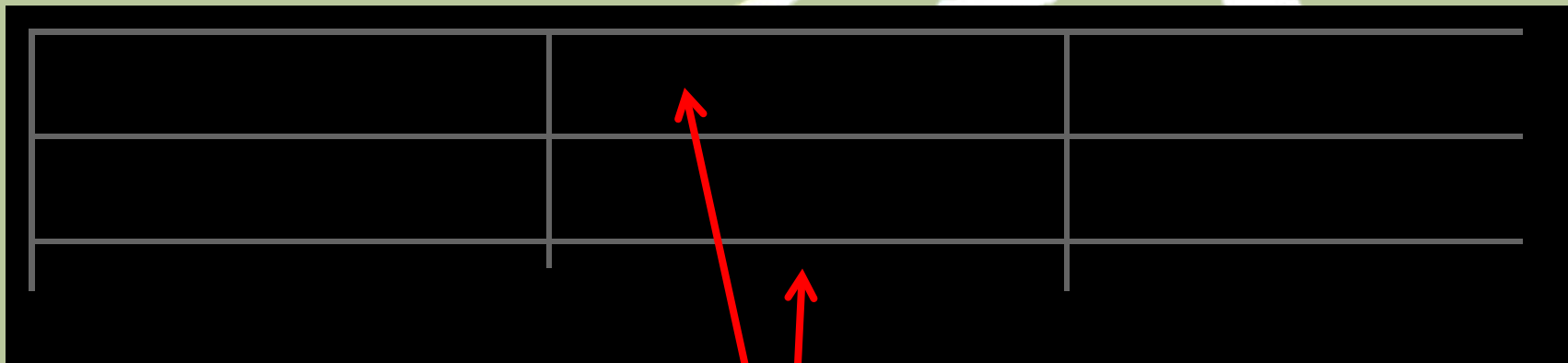


The right grids change the size of the image in horizontal and vertical planes.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

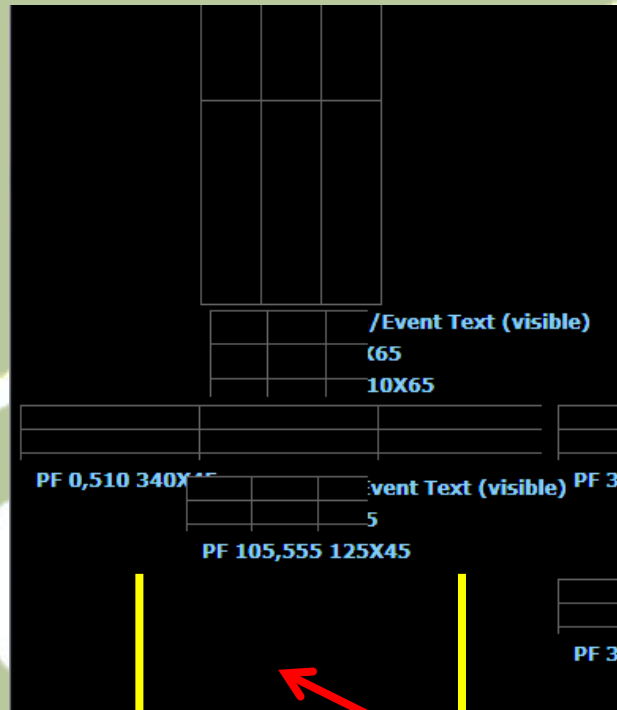


The Top and Bottom center grids change the shape in the Vertical Plane.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

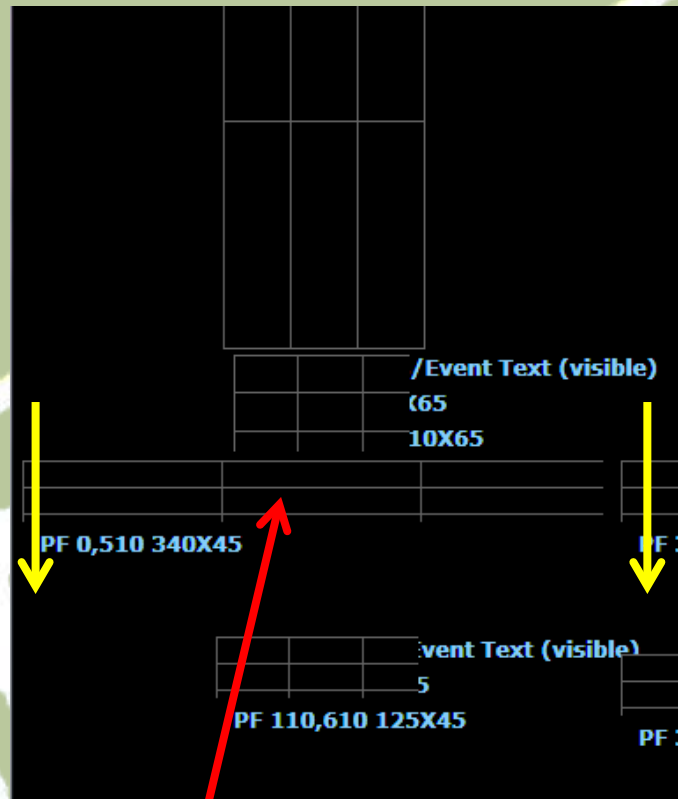


First we would like to move the bottom most image to the bottom of the screen by placing the cursor in the middle grid of the image, depressing the left mouse button and positioning it in the desired position (the bottom of the screen out of the way).

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4chPZOK for Atlantis

The Protocol is now ready for Modification

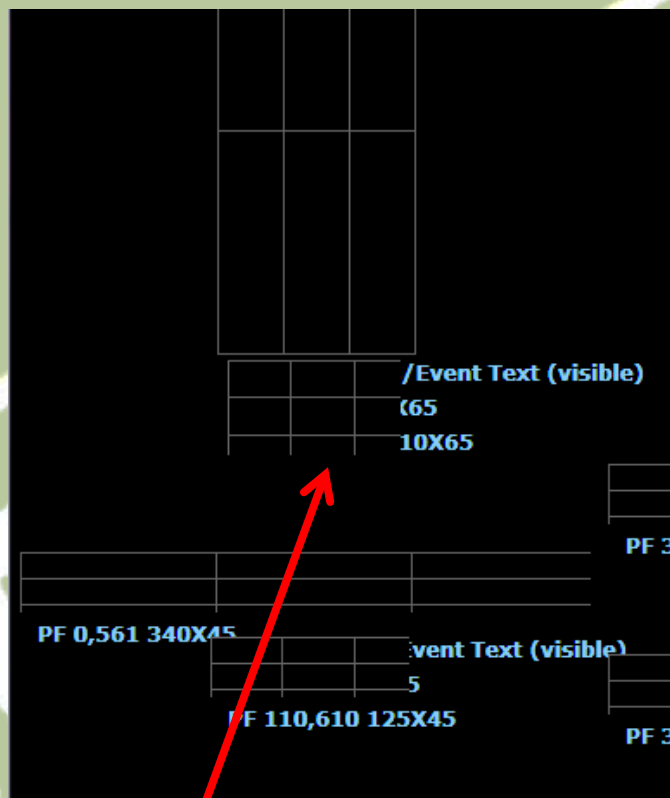


Next we move the image above that down to fit above the image we just moved. Place the cursor in the middle grid of the image, depress the left mouse button and move it to fit above the bottom image.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

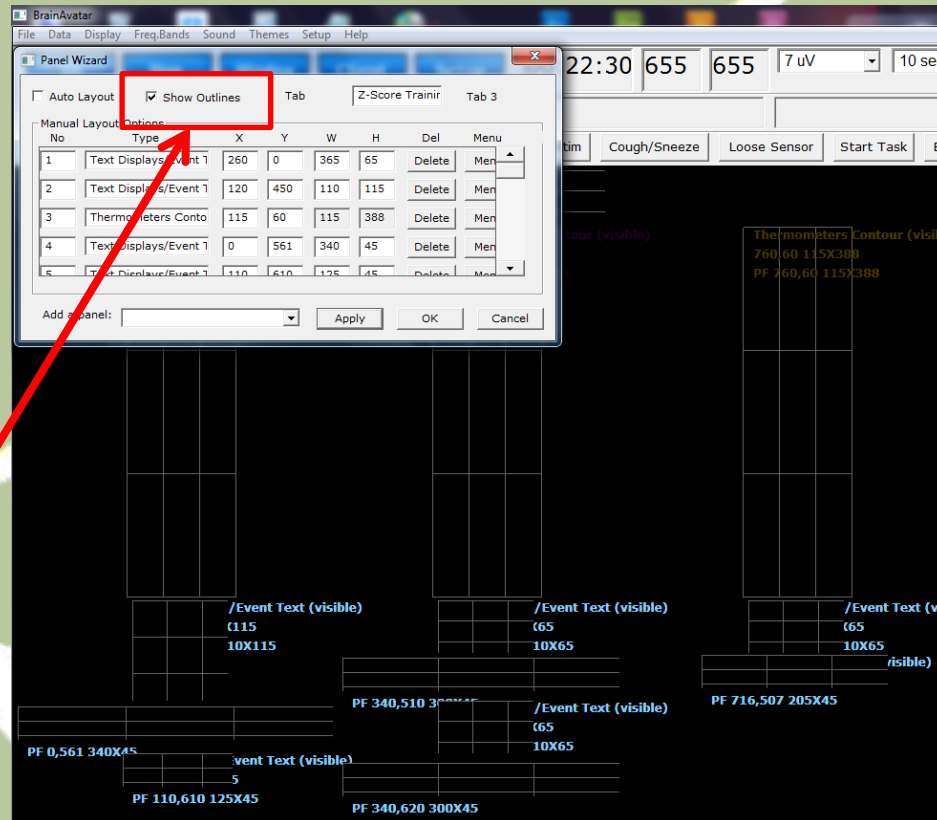


This final image isn't to be moved but to be doubled in size. So, place the cursor in the center bottom grid and drag it down to fit near the top of the last image we moved.

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4chPZOK for Atlantis

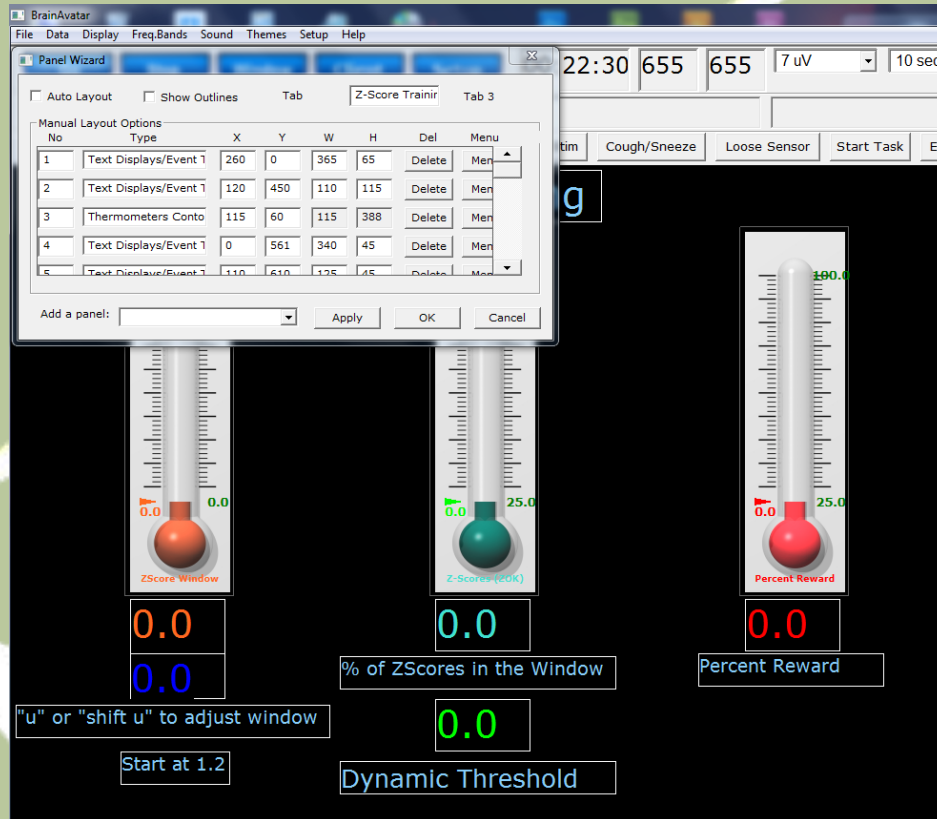
The Protocol is now ready for Modification



Now, to restore the screen simply “click-off” the “Show Outlines” box at the top. Next, click “OK” to save the changes and close the pop-up box.

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The Protocol is now ready for Modification

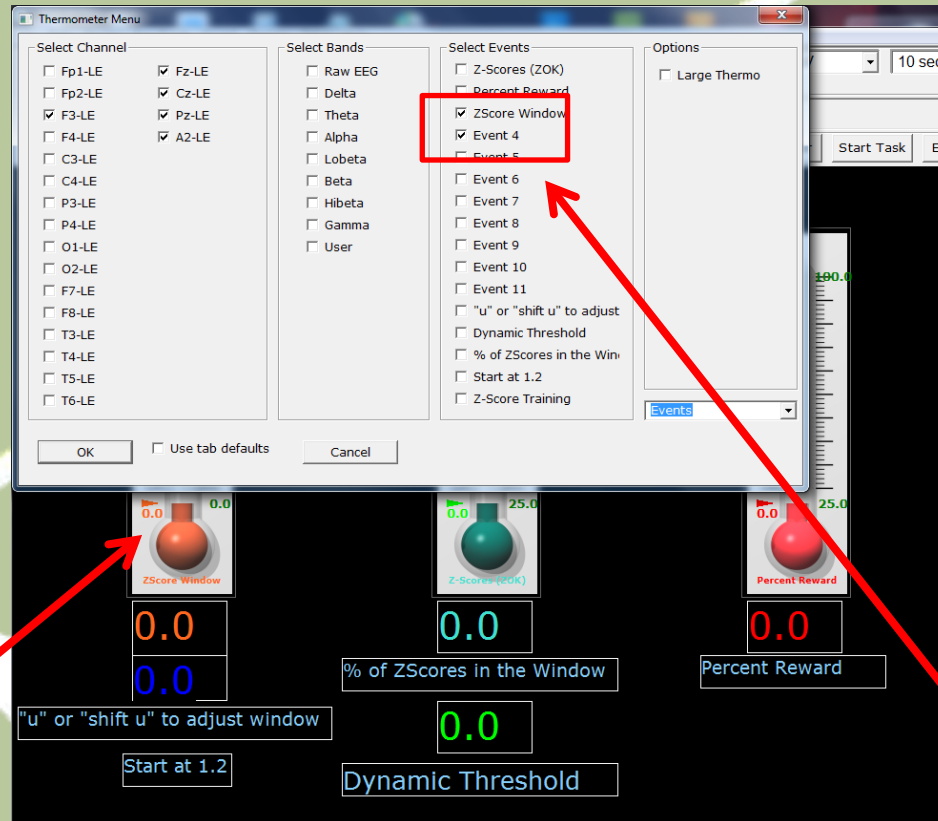


Voila! The changes have been made. Hold on...Perhaps you would like a second thermometer describing the lower limit. Perhaps take a moment and try to figure this out before proceeding to the next slide. Hint! Use the same method as duplicating the meter.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

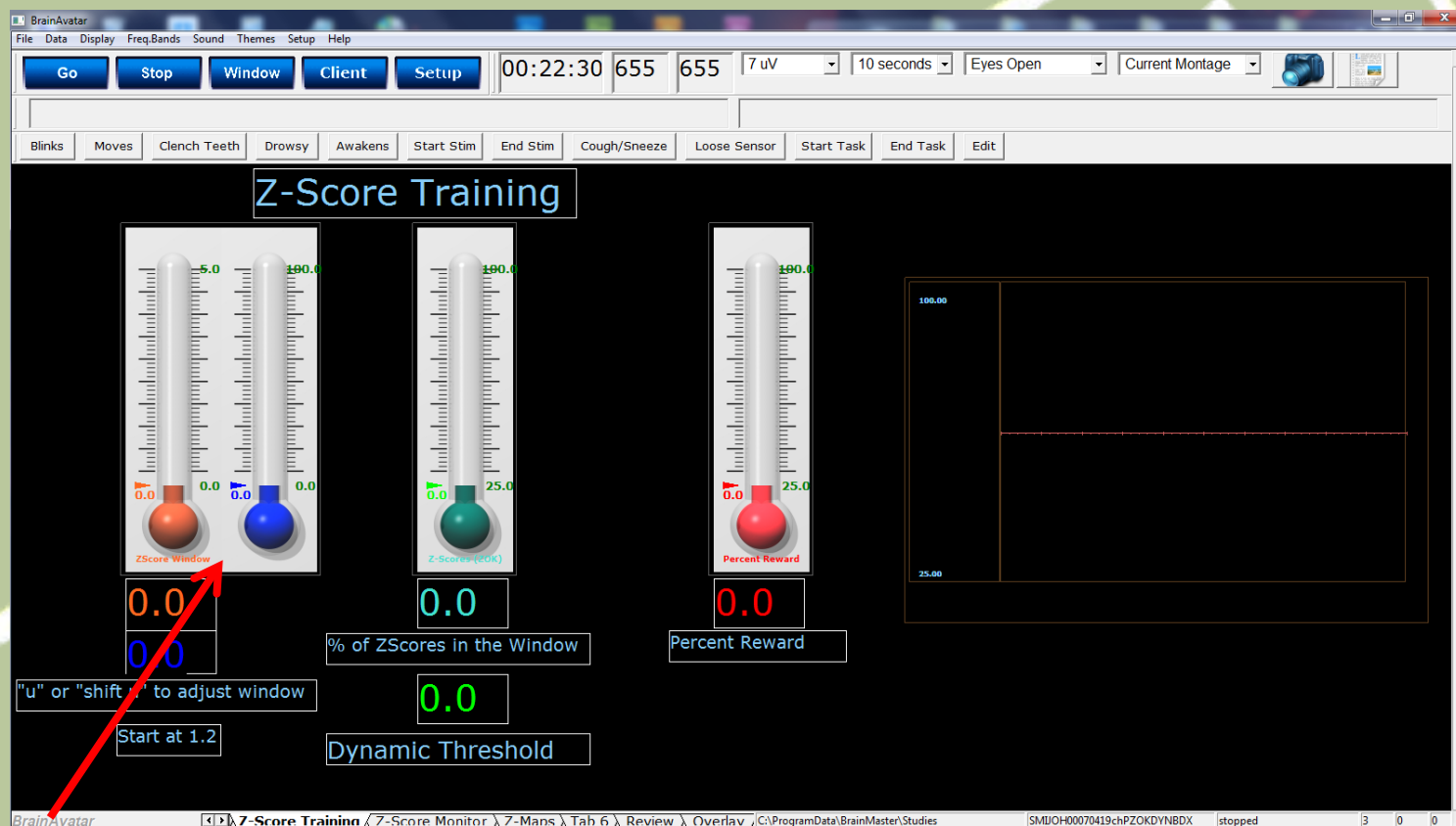


Start by “Right-Clicking” the Orange Thermometer. Notice the Thermometer Menu shows “Select Events” towards the left top of the screen. Select the fourth event as we did with the meter. Click “OK” when complete.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

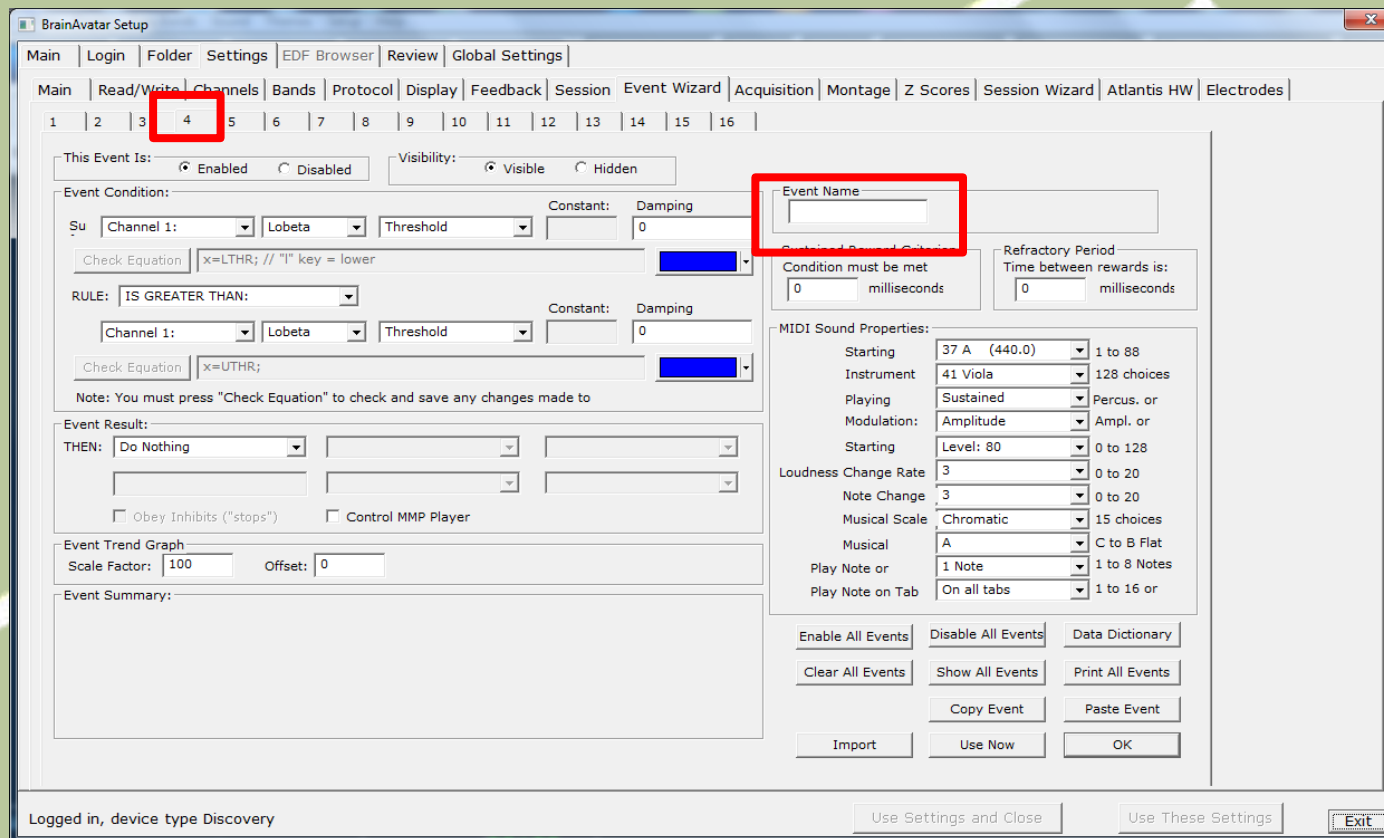


Notice our second thermometer appeared. Whoa! When I check this thermometer I notice there is no title and the scale is all wrong. It shows 0 – 100 when the workable range for this lower limit thermometer should be -5 SD's to 0. To correct this we must go to Event 4 of the Event Wizard.

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The Protocol is now ready for Modification



A shortcut way of getting to the event wizard is to tap "CTRL-E" on the keyboard. Once in the Event Wizard click "Event 4". Remember this is the event which controls the Lower Limit of the PZOK Window. You may enter an event name. Perhaps use "Lower Limit".

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4chPZOK for Atlantis

The Protocol is now ready for Modification

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Su Channel 1: Lobeta Threshold Constant: Damping 0

Check Equation x=LTHR; // "I" key = lower

RULE: IS GREATER THAN: Channel 1: Lobeta Threshold Constant: Damping 0

Check Equation x=UTHR;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Do Nothing

☐ Obey Inhibits ("stop") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 100 Offset: 0

Event Summary

Event Name: Lower Limit

Sustained Reward Criterion: Condition must be met 0 milliseconds

Refractory Period: Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting 37 A (440.0) 1 to 88

Instrument 41 Viola 128 choices

Playing Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting Level: 80 0 to 128

Loudness Change Rate 3 0 to 20

Note Change 3 0 to 20

Musical Scale Chromatic 15 choices

Musical A C to B Flat

Play Note or 1 Note 1 to 8 Notes

Play Note on Tab On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Use Settings and Close Use These Settings Exit

Logged in, device type Discovery

Look in the area entitled “Event Trend Graph” and consider the “Scale Factor” and the “Offset”.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

The screenshot shows the 'BrainAvatar Setup' window with the 'Event Wizard' tab selected. The 'Event Name' is 'Lower Limit'. The 'Event Condition' is set to 'Channel 1: Lobeta Threshold' with a 'Rule' of 'IS GREATER THAN:'. The 'Event Result' is 'Do Nothing'. The 'Event Trend Graph' section is highlighted with a red box, showing 'Scale Factor: 100' and 'Offset: 0'. The 'MIDI Sound Properties' section is also visible on the right.

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Su Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=LTHR; // "I" key = lower

RULE: IS GREATER THAN: Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=UTHR;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Do Nothing

☐ Obey Inhibits ("stop") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 100 Offset: 0

Event Summary

Event Name: Lower Limit

Sustained Reward Criterion Condition must be met: 0 milliseconds Refractory Period Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting: 37 A (440.0) 1 to 88 Instrument: 41 Viola 128 choices Playing: Sustained Percus. or Modulation: Amplitude Ampl. or Starting: Level: 80 0 to 128 Loudness Change Rate: 3 0 to 20 Note Change: 3 0 to 20 Musical Scale: Chromatic 15 choices Musical: A C to B Flat Play Note or: 1 Note 1 to 8 Notes Play Note on Tab: On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Logged in, device type Discovery

Use Settings and Close Use These Settings Exit

The offset is where a graph starts. So in this instance we would like the graph or in this case the thermometer to start at -5. Enter -5 in the offset box. The scale factor are the desired units you would like to extend beyond the offset. So, in this case we would like the scale to go from -5 SD's to 0 or 5 units. Enter a 5 in the Scale Factor Window.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

BrainAvatar Setup

Main | Login | Folder | Settings | EDF Browser | Review | Global Settings

Main | Read/Write | Channels | Bands | Protocol | Display | Feedback | Session | Event Wizard | Acquisition | Montage | Z Scores | Session Wizard | Atlantis HW | Electrodes

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

This Event Is: ☒ Enabled ☐ Disabled Visibility: ☒ Visible ☐ Hidden

Event Condition:

Su Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=LTHR; // "I" key = lower

RULE: IS GREATER THAN: Channel 1: Lobeta Threshold Constant: Damping

Check Equation x=UTHR;

Note: You must press "Check Equation" to check and save any changes made to

Event Result:

THEN: Do Nothing

☐ Obey Inhibits ("stops") ☐ Control MMP Player

Event Trend Graph

Scale Factor: 5 Offset: -5

Event Summary:

Event Name: Lower Limit

Sustained Reward Criterion: Condition must be met 0 milliseconds

Refractory Period: Time between rewards is: 0 milliseconds

MIDI Sound Properties:

Starting: 37 A (440.0) 1 to 88

Instrument: 41 Viola 128 choices

Playing: Sustained Percus. or

Modulation: Amplitude Ampl. or

Starting: Level: 80 0 to 128

Loudness Change Rate: 3 0 to 20

Note Change: 3 0 to 20

Musical Scale: Chromatic 15 choices

Musical: A C to B Flat

Play Note or: 1 Note 1 to 8 Notes

Play Note on Tab: On all tabs 1 to 16 or

Enable All Events Disable All Events Data Dictionary

Clear All Events Show All Events Print All Events

Copy Event Paste Event

Import Use Now OK

Logged in, device type Discovery

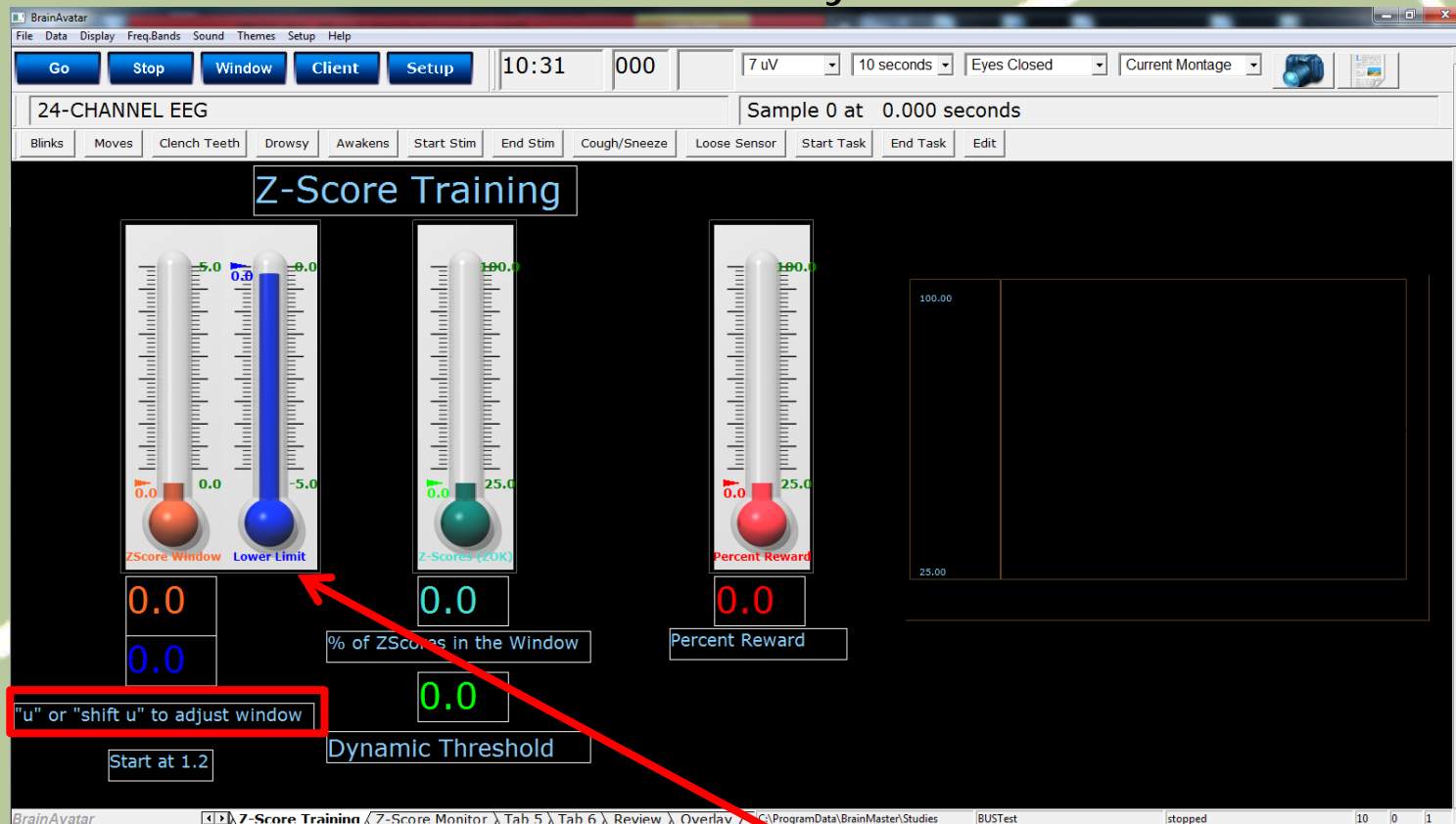
Use Settings and Close Use These Settings Exit

Click "Use Settings and Close" to save the changes.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

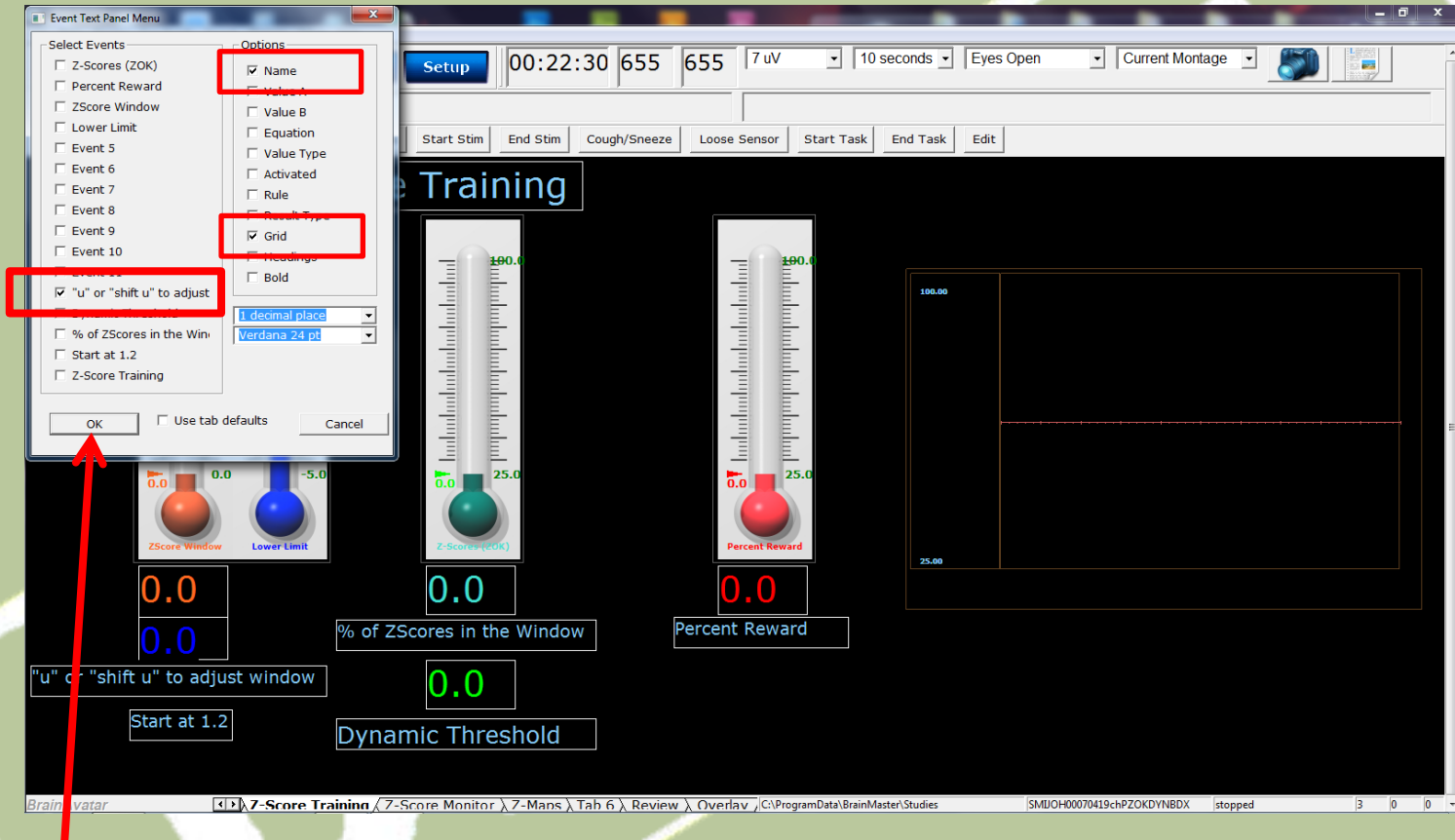


Notice our second thermometer has an event name (Lower Limit) and the scale is now correct and opposite of the Upper Limit Scale. We now have a little housekeeping to do. Notice the label depicted describes only a “u” key instead of a “u” and “l” key. In order to change the labels start by “Right-Clicking” the label in order to find which event manages it.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

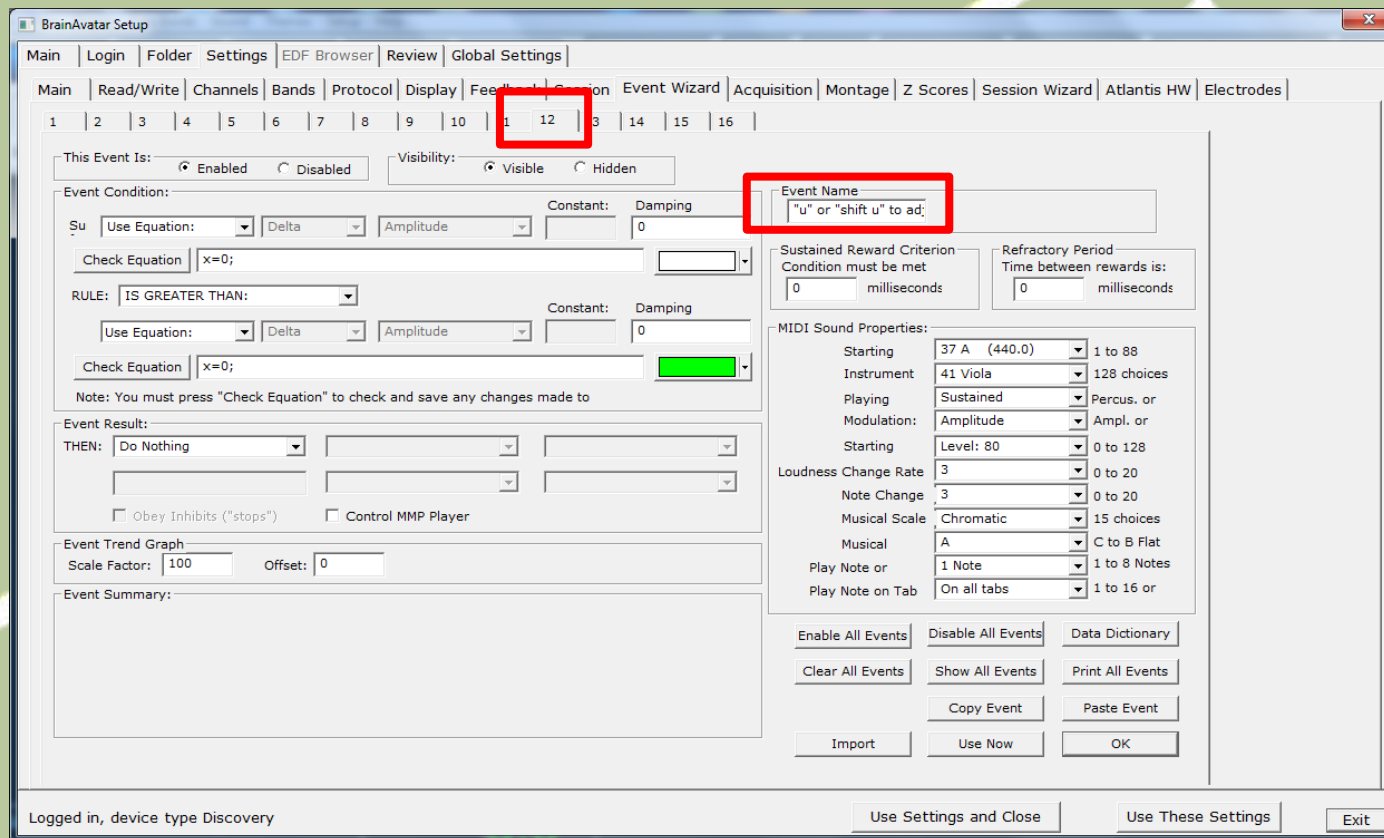


Notice it is the name of Event 12 with a Grid around it. Click OK to eliminate the drop down box and then click Ctrl-E to bring up the Event Wizard.

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4chPZOK for Atlantis

The Protocol is now ready for Modification

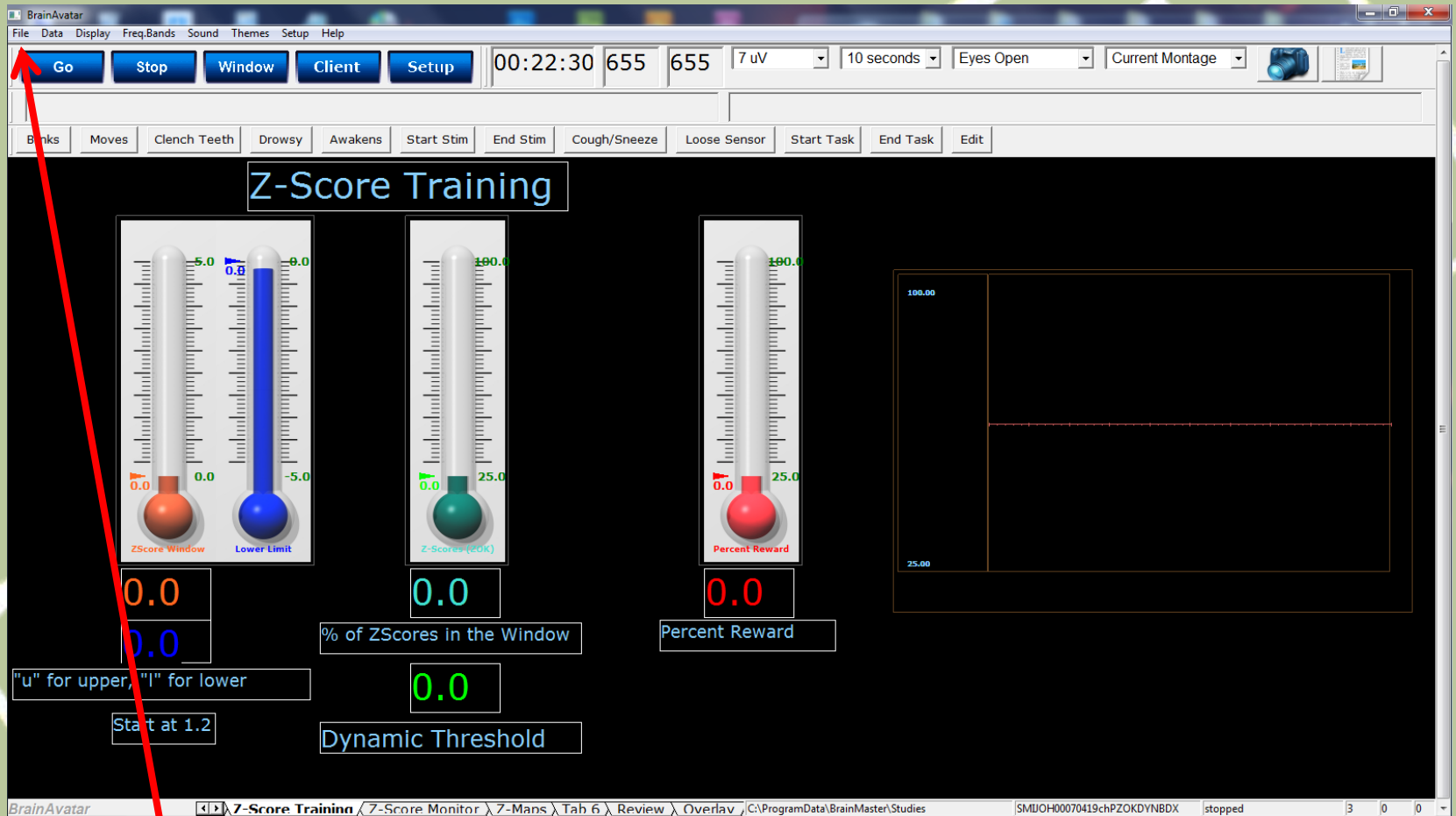


Notice the “Event Name” of Event 12 is the same as the label in the Z-Score Training Tab. Change the Event Name to “u” for upper, “l” for lower.

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Next we may save our changes



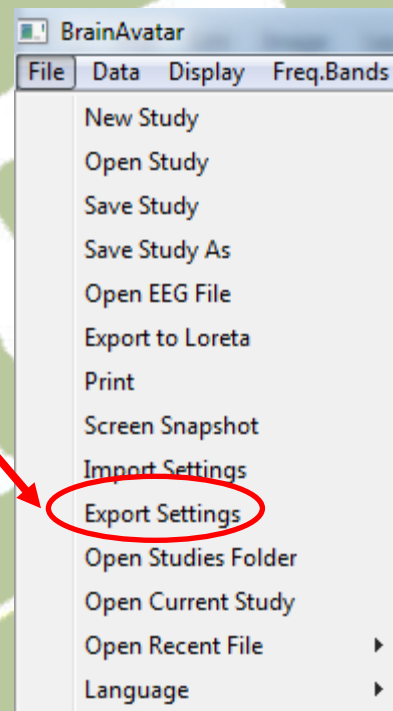
Applaud the great work you have accomplished. In order to save the setting click “File”.

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Level 3

Next click “Export Settings”.

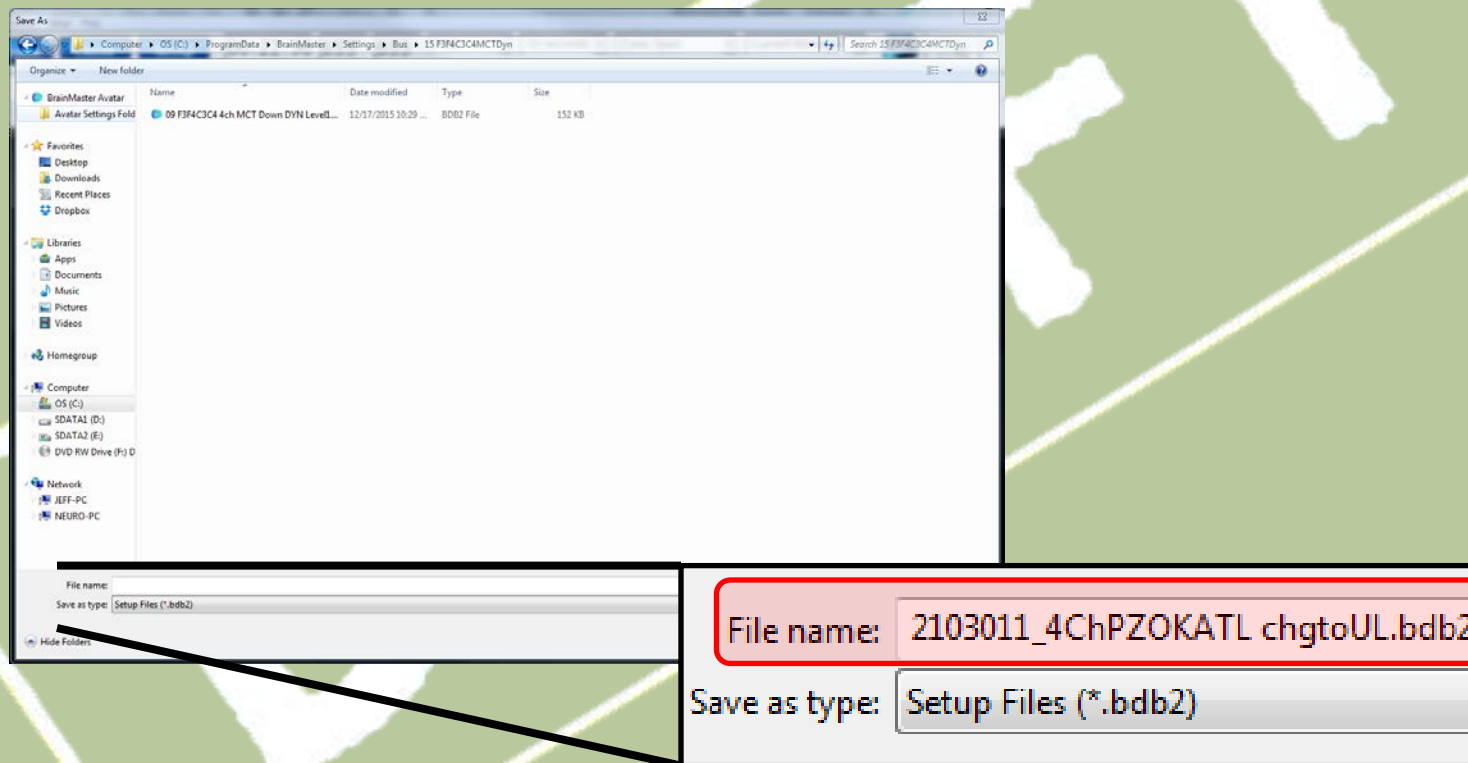


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4chPZOK for Atlantis

Level 3

Find the folder where you keep these settings and name the file appropriately in the “File Name:” window.

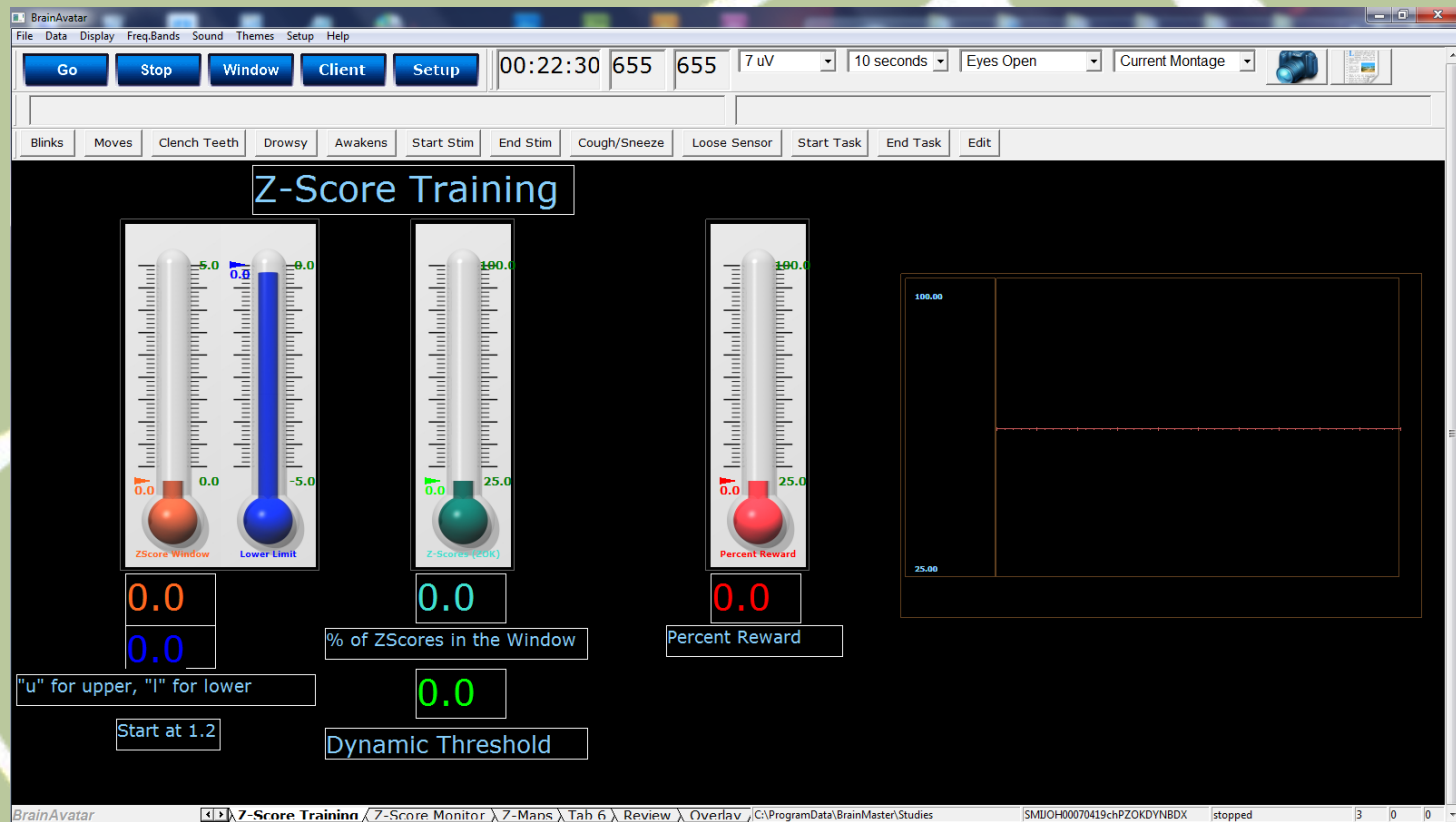


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Level 3

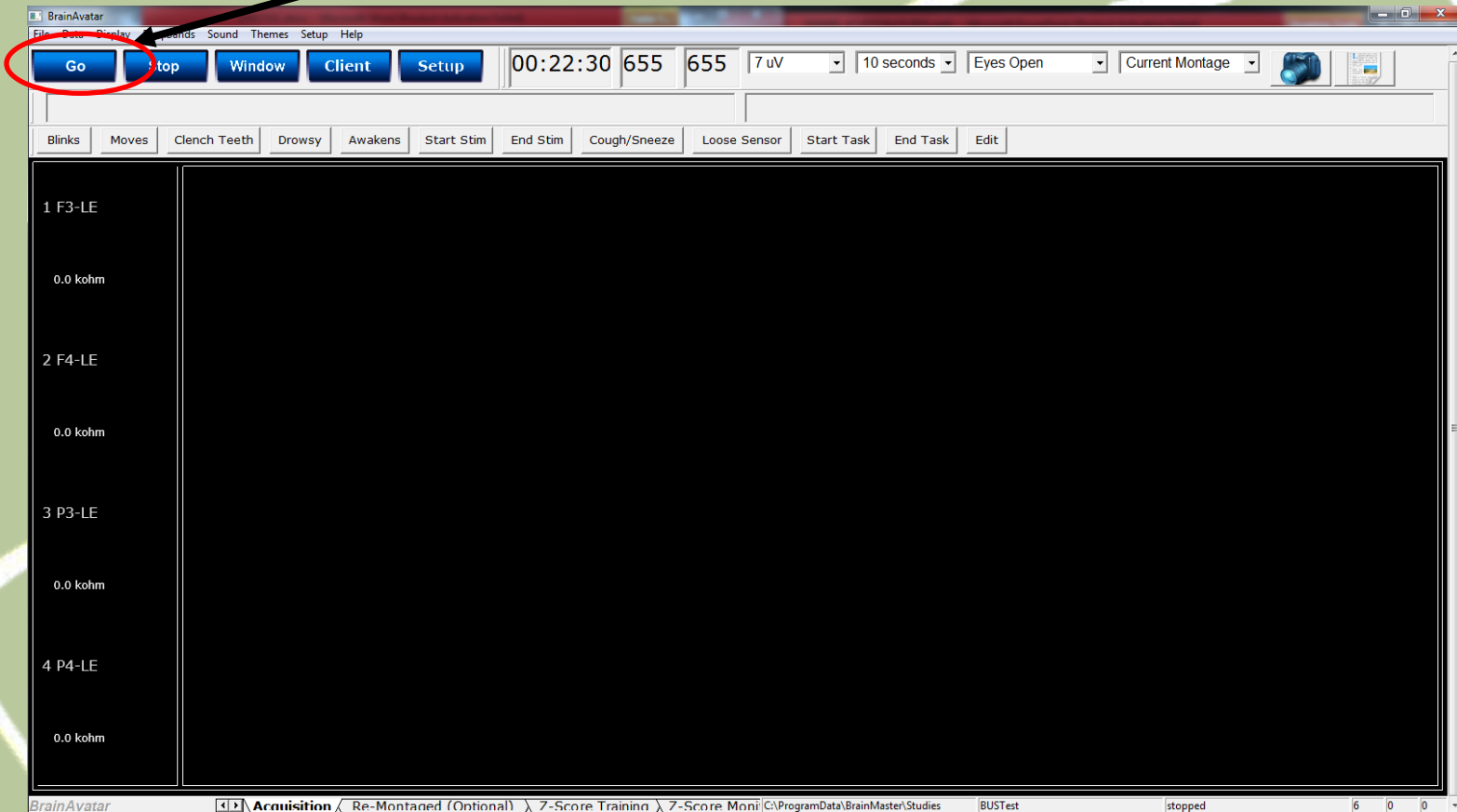
The Protocol Is now ready to run with the revised Settings.



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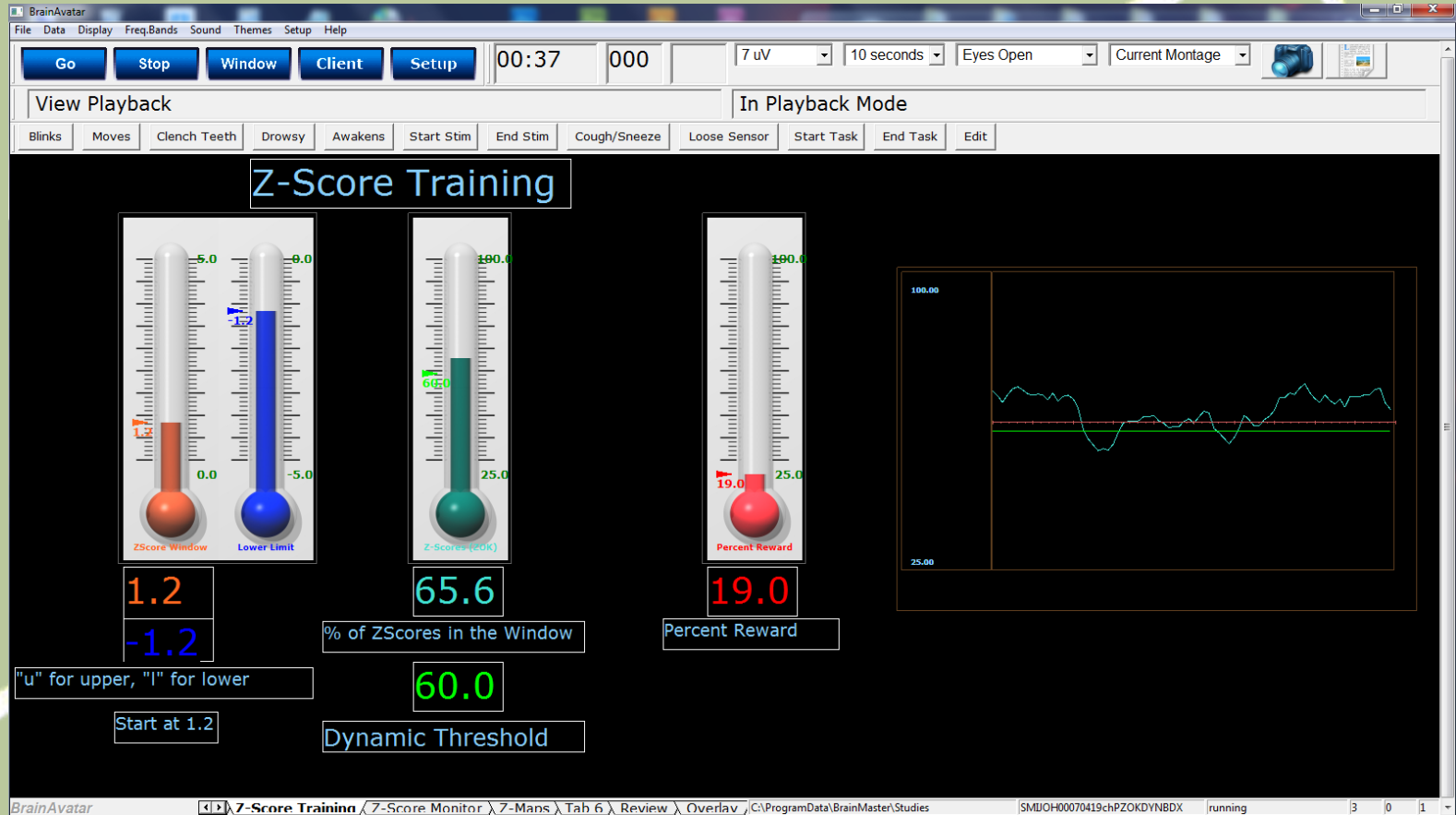
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To run the protocol Click the "Go" Button



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Once the protocol starts to run notice both the upper limit and lower limit is set to 0. Tap the u key 12 times to raise it to 1.2 SD's above 0. Tap the shift-l key 12 times to lower the lower limit to 1.2 SD's below 0. You now have the window set with two independent limit controls. Adjust the upper limit and lower limit as you may specify.

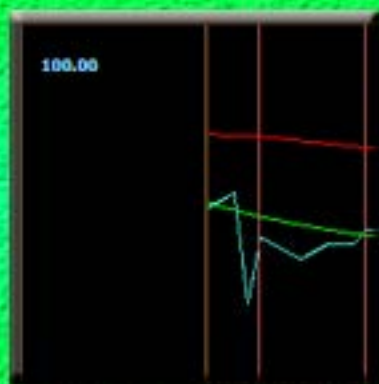
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Power Point Manual

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Level 3