Guide to Coherence Training with the BrainMaster

This guide explains the simplest way to set up and train coherence using the BrainMaster with 1.9A or later software. The advanced features (Event Wizard, animations, DVD's) require 2.5SE or 3.0. While the BrainMaster contains a complete protocol processor that manages the enhances and inhibits for up to 8 components for each EEG channel, the coherence subsystem has been designed to operate separately, in order to keep things simple. The coherence training system is basically a form of sound feedback, and does not interact with the protocol processor. Therefore, it is set up in a different manner, and can be used along with a standard protocol, or by itself.

More advanced protocols, such as the built-in protocol "peak" also use the Event Wizard or more advanced features such as multimedia, games, and DVD. This document explains the most simple, built-in coherence training using up or downtraining, and MIDI sounds. It then explains the built-in protocols "peak" and also "Beta coherence range training" that use the Event Wizard for advanced capabilities.

The basic key to setting up for coherence training using the built-in coherence sound function is the following:

On the Display Options dialog:

1. Select the components for which you wish to hear sounds
2. (optionally) Select the coherence display

On the Feedback Control dialog:

1. Select coherence sounds
2. Select an appropriate coherence threshold
3. Select whether to "uptrain" or "downtrain" coherence

You will hear coherence sounds for any components that were selected. You can modify these selections from the training screen toggle buttons, if you wish to add or delete components from being heard. In order to see the choices change, it is helpful to be watching the filtered waveforms or the thermometer window, to see the components come and go as they are selected or deselected. Once this is done, you do not need to keep any windows visible, for the sounds to be heard. The coherence sounds will be heard regardless of what screens the user is viewing.

A component will play its coherence sound when its coherence goes above (if uptraining) or below (if downtraining) the coherence threshold.

Adjust the coherence threshold so that the trainee gets useful sound feedback. It is best if the trained component plays sounds more than half the time, but not all of the time. The coherence threshold can be raised at any time by typing "c" while the training screen is the active window. The letter "C" will lower the coherence threshold.

Note that the coherence window is always available whenever 2-channel training is being done, so that it can be viewed at any time, regardless of the type of training being used. Thus, even if you are doing C3 beta/C4 smr training, you can bring up the coherence screen and see the coherence values. In addition, coherence is always written to the summary file, and to the excel file. Therefore, you can monitor and look at the coherence between any pair of channels, regardless of how the EEG training is being done.

The built-in "peak" with more features included is found in the following list:
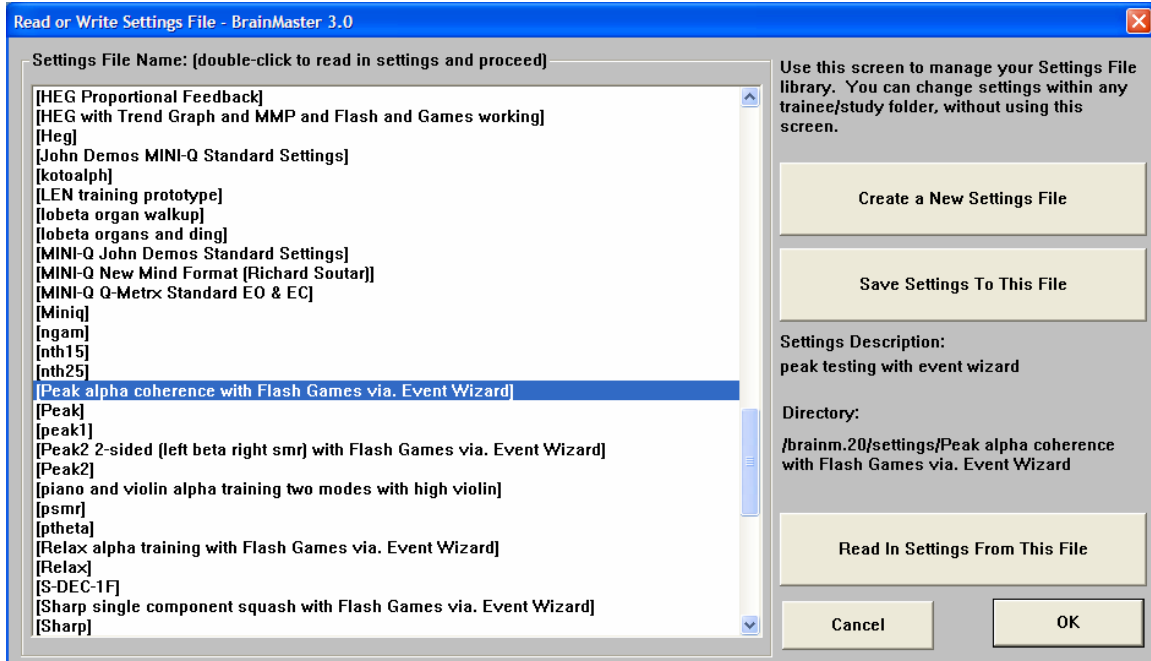
It is designed for alpha coherence uptraining, but can be modified for other bands.

One method to modify this is to change the frequency range and/or name on the existing alpha band, to suit:

You can change the word "Alpha", the lower band "8.0" or the upper band "12.0" to change the protocol, and everything (Multimedia, games, etc) will still work. If you change the selection of "alpha" in the "Display Options" dialog, then you will be training a different band, and need to make corresponding changes in the Frequency Bands, as well as the Event Wizard, to match.

The protocol design "peak" also uses the Event Wizard to produce sounds. It uses the existing calculation for alpha ("C1AC" is channel 1 alpha coherence), and it uses the built-in coherence threshold ("CT"). It then tells the Event Wizard to process sounds, control the multimedia, etc.
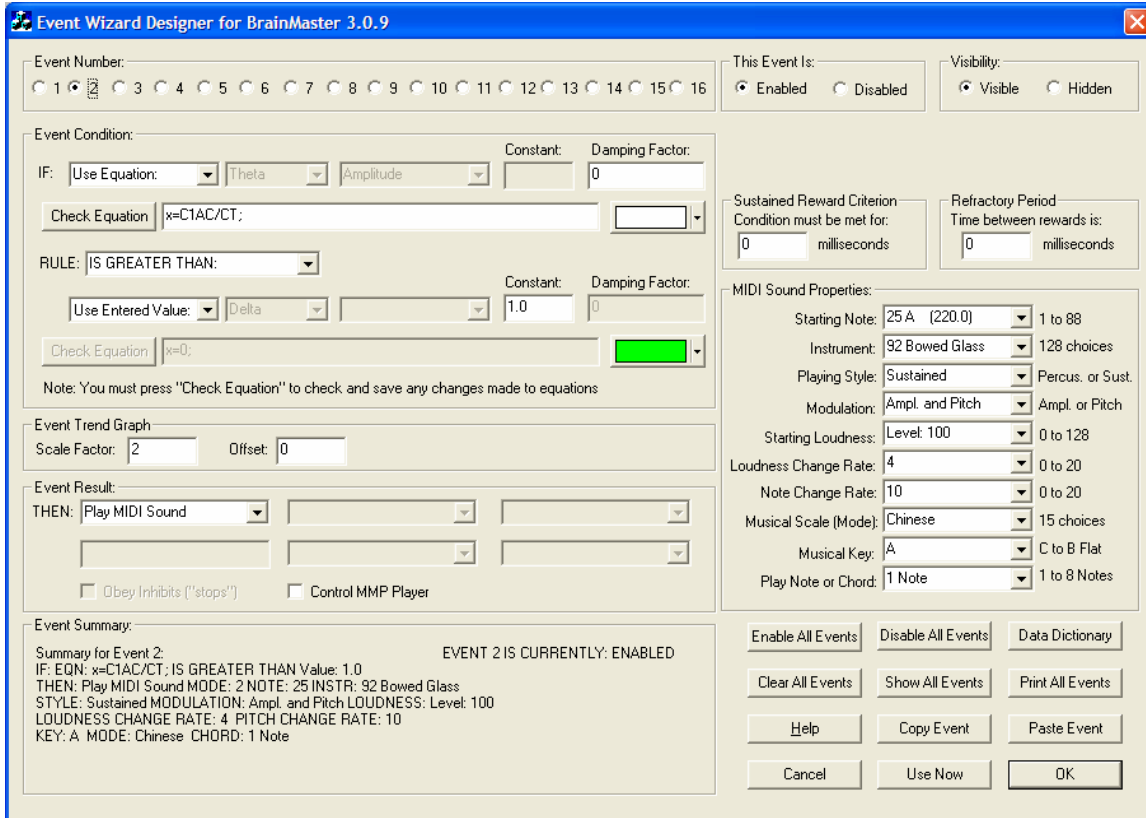
You could add points counting to event 5 by adding the event result in the pulldown in the Event Result control area. This example also uses a refractory period of 1000 milliseconds, so 1 point per second is the maximum rate of reward:
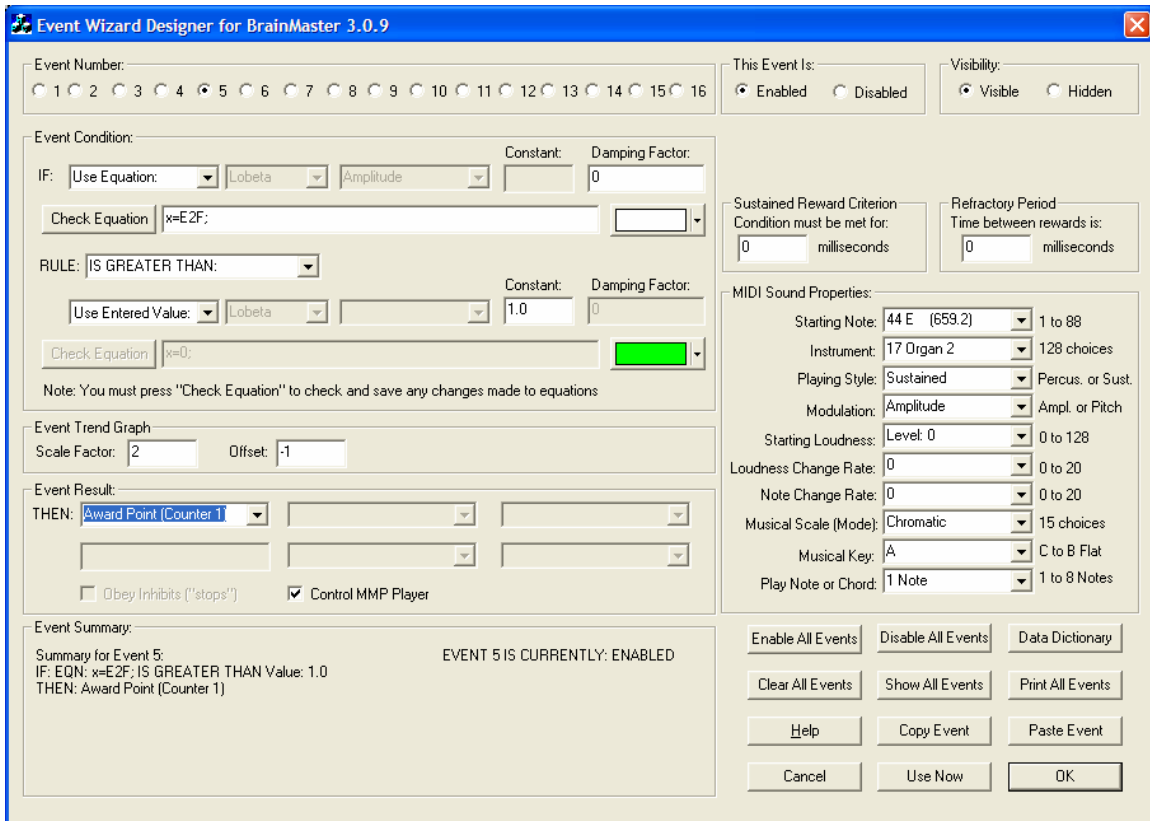
This is the display as it is first shown in the "peak" protocol, if you switch to simulation. Note that we added points counting, so points now show up, at a maximum rate of 1 per second:
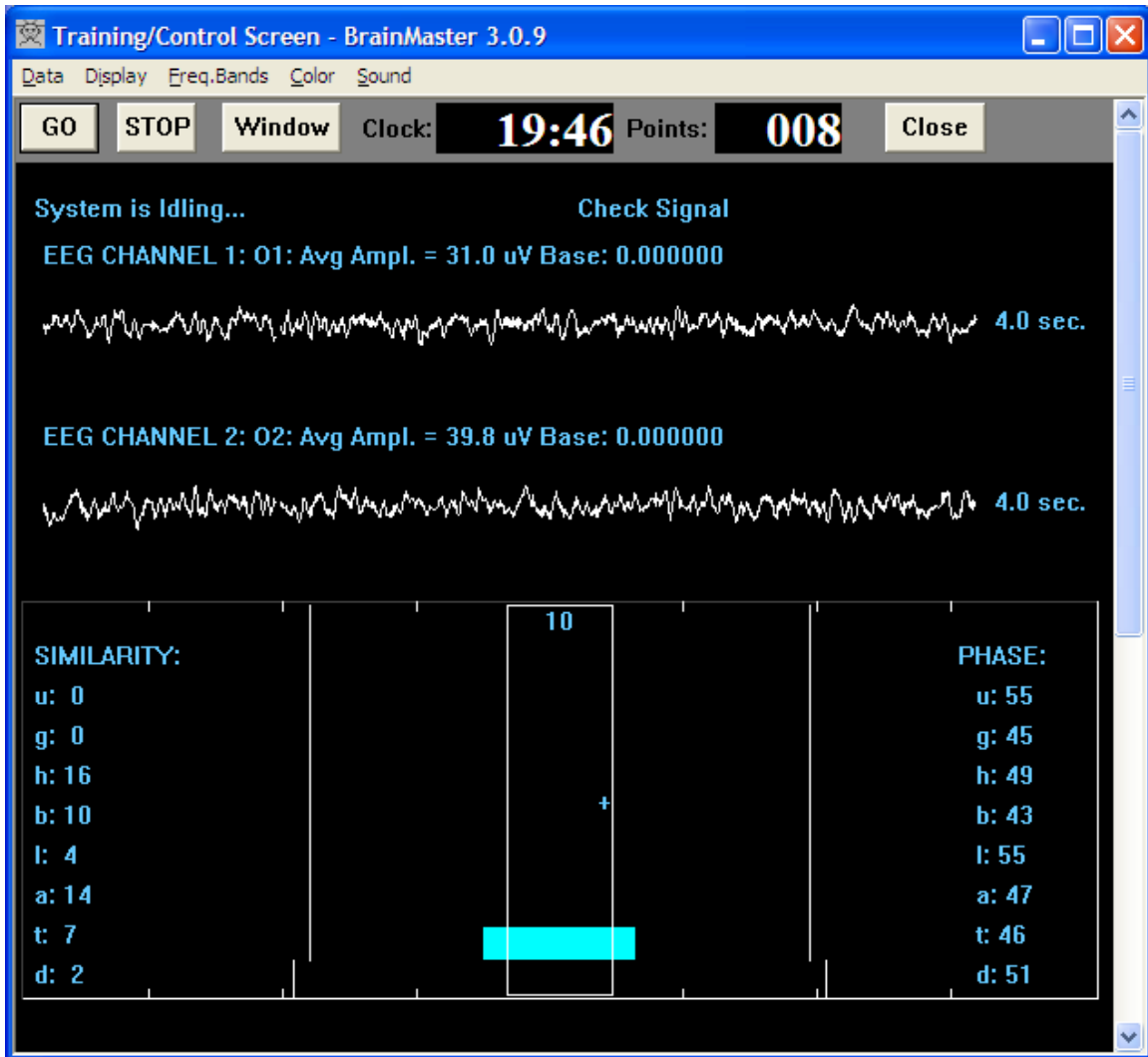

The display can of course be modified by adding panels, windows, etc. to view. You can also bring up the animation, DVD player, or the Flash Games (BrainCell, BrainMan, etc.) with coherence training.

There is also a built-in beta coherence range training protocol that uses the Event Wizard for the training. It trains coherence into a range, not just up or down:
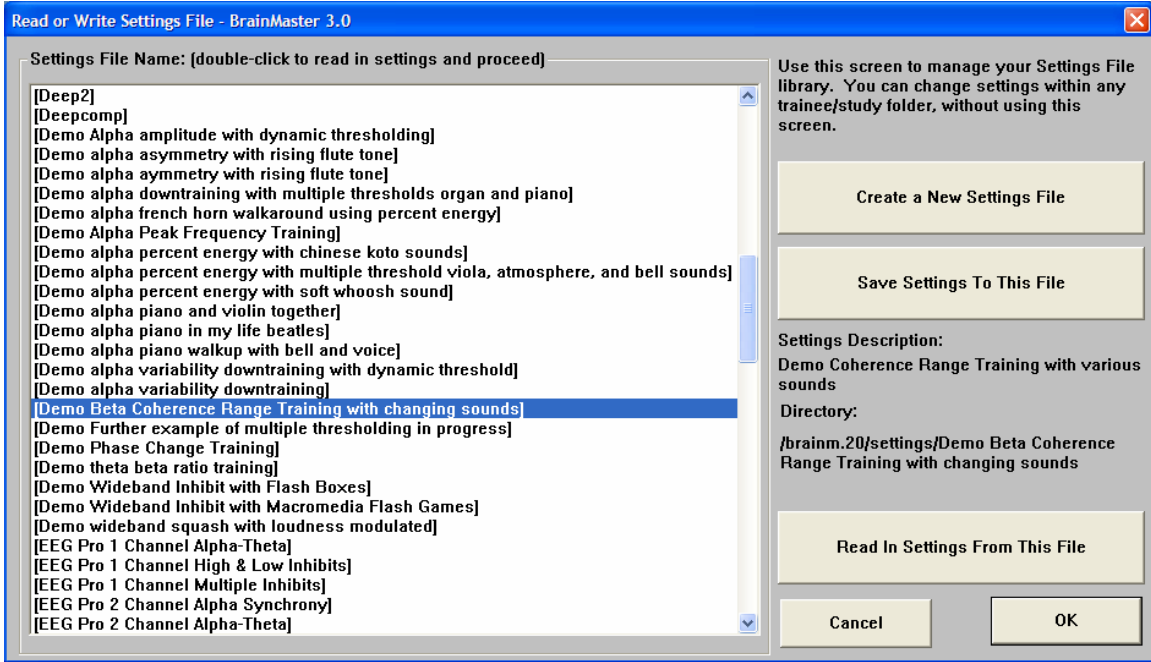
It produces the following screen:
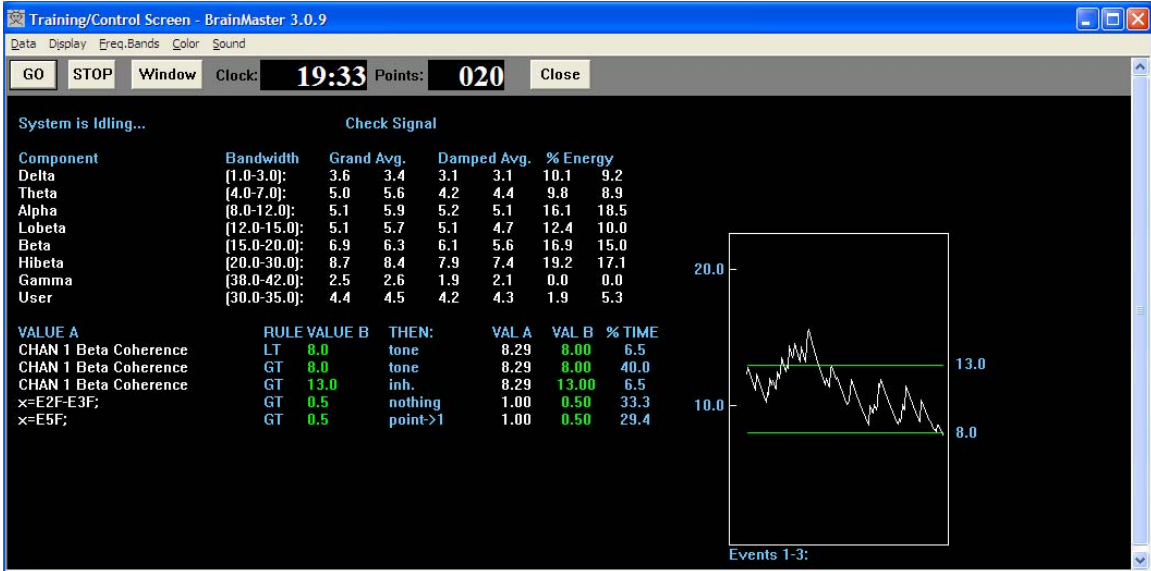
It can also be used with additional panels, games, Flash Games, Animations, and DVD's. You can also change the Event Wizard settings as desired.