

# Phase Change Training with Brainmaster 2.5SE

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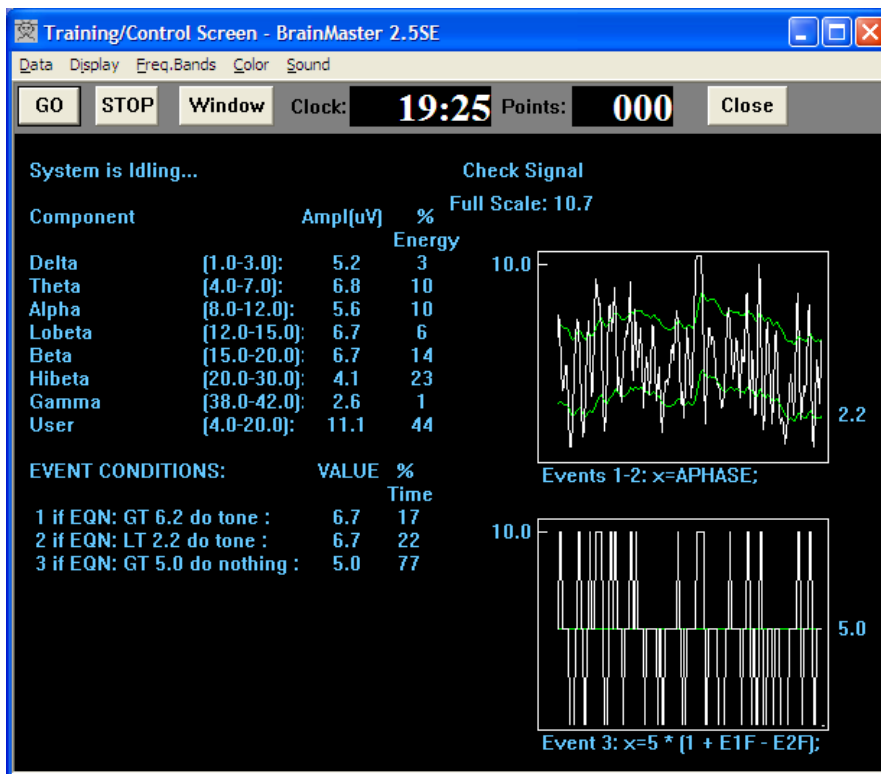
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The following example screen uses the settings file “Demo phase change” with BrainMaster 2.5SE software (3-13-06 or later). The training variable is the instantaneous phase difference between channels 1 and 2. This is computed in real time using a proprietary quadrature method that produces a phase metric scaled between 0 and 100, where 0 means “no phase difference” and 100 means “180 degrees out of phase”. The phase metric is an “even” function of the exact phase, and thus has no wraparound discontinuity.

In this protocol, phase thresholds are derived from the damped phase signal, providing dynamic thresholding. The damping factor is “20”, which corresponds to an exponential time constant of approximately 2 seconds. In this demonstration, the input signal is bandlimited white noise.

The BrainMaster Math Wizard is used to define thresholds with offsets for upper and lower bounds. Events are graphed on the right side of the display. Events 1 and 2 define the actions at the upper and lower thresholds. Event 3 shows a derived variable that shows a flag that is “high” when phase is increasing, “low” when phase is decreasing, and 0 otherwise. This shows the ability of the 2.5SE software to create derived variables for any type of training application.



The text panel at lower left shows percent times that criteria are satisfied. Thus, in this simulation, phase is “increasing” 17 percent of the time, and “decreasing” 22 percent of the time. Percents can be adjusted by changing threshold damping factors and offsets.