

V. DATA ANALYSIS

FAST TRACK Data Analysis

1. Enter the **Review Saved Data** mode.

- Note Channel Number (CH) designations:

Channel *Displays*

CH 1 **EEG**

CH 40 **alpha**

CH 41 **alpha RMS**

- Note measurement box settings:

Channel *Measurement*

CH 1 **Stddev**

CH 40 **Stddev**

CH 41 **Mean**

CH 40 **Freq**

2. Set up your display window for optimal viewing of the entire recording.

Detailed Explanation of Data Analysis Steps

If entering **Review Saved Data** mode from the Startup dialog or lessons menu, make sure to choose the correct file.

The data should resemble Fig. 4.13.

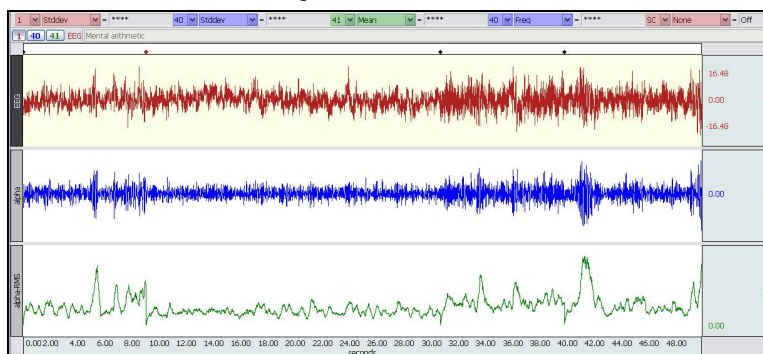


Fig. 4.13 Example data

The measurement boxes are above the marker region in the data window. Each measurement has three sections: channel number, measurement type, and result. The first two sections are pull-down menus that are activated when you click them.


Brief definition of measurements:

Stddev: Standard deviation is a measure of the variability of data points. The advantage of the Stddev measurement is that extreme values or artifacts do not unduly influence the measurement.

Mean: Displays the average value in the selected area.

Freq: Converts the time segment of the selected area to frequency in cycles per second

The selected area is the area selected by the **I-beam** tool (including endpoints).

Note: The append event markers  mark the beginning of each recording. Click on (activate) the event marker to display its label.

Useful tools for changing view:

Display menu: Autoscale Horizontal, Autoscale Waveforms, Zoom Back, Zoom Forward

Scroll Bars: Time (Horizontal); Amplitude (Vertical)

Cursor Tools: Zoom Tool

Buttons: Overlap, Split, Show Grid, Hide Grid, -, +

Hide/Show Channel: ⌘Alt + click (Windows) or ⌘Option + click (Mac) the channel number box to toggle channel display.

Data Analysis continues...

- Use the I-Beam cursor to select the first data recording.



A

- Repeat the measurements for each of the data recordings.



A

- Zoom in on a small section of the Recording 1 data.
- Use the I-Beam cursor to select an area from one peak to the next in the **alpha** band (CH 40).



B

- Answer the questions at the end of the Data Report.
- Save** or **Print** the Data Report.
- Quit** the program.

END OF DATA ANALYSIS

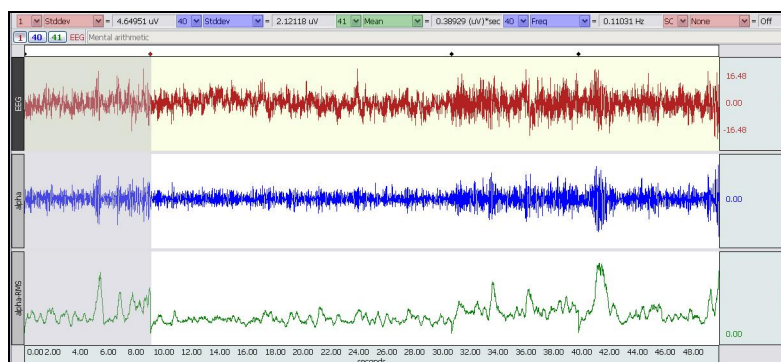


Fig. 4.14 First data recording selected

Be sure to zoom in far enough so that you can easily measure the frequency of the **alpha** wave.

Fig. 4.15 shows a sample setup for measuring the frequency in the **alpha** band (CH 40).

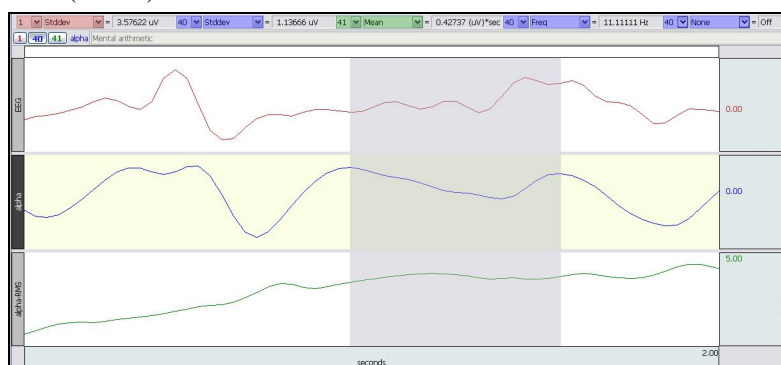


Fig. 4.15 Alpha wave frequency measurement

An electronically editable **Data Report** is located in the journal (following the lesson summary,) or immediately following this Data Analysis section. Your instructor will recommend the preferred format for your lab.

END OF LESSON 4

Complete the Lesson 4 Data Report that follows.

ELECTROENCEPHALOGRAPHY II

• EEG II

DATA REPORT

Student's Name: _____

Lab Section: _____

Date: _____

I. Data and Calculations

Subject Profile

Name: _____

Height: _____

Age: _____

Gender: Male / Female

Weight: _____

Amplitudes

- A. **Complete Table 4.1 with the amplitudes of the recorded data** in the control and experimental conditions. Calculate the difference for the Alpha-RMS Mean between the Experimental Conditions and the Control, and then summarize whether the Experimental Mean was larger (+), smaller (−), or the same (=) as the Control Mean.

For example: To calculate Alpha-RMS Difference for the “Mental Arithmetic” recording, subtract the “Eyes Closed (Control)” Alpha-RMS value from the measured “Mental Arithmetic” Alpha-RMS value.

Table 4.1

Condition	EEG		Alpha		Alpha-RMS		Alpha-RMS Difference (Exp. - Control)	Alpha-RMS Summary (+, −, =)
	1	Stddev	40	Stddev	41	Mean		
Eyes closed (Control)								
Mental arithmetic								
Recovering from hyperventilation								
Eyes open								

Frequency

- B. What is the frequency of an alpha rhythm from “Eyes closed” data? 40 Freq = _____ Hz
Does this agree with the expected values? Yes No

II. Questions

- C. Refer to Table 4.1: When was the general amplitude of the EEG highest?

- D. Refer to Table 4.1: When were the alpha wave levels highest?

E. Refer to Table 4.1: How do your results compare with the information presented in the Introduction?

F. Did Subject need to concentrate during math problems? Yes No
How would the level of concentration required affect the data?

G. What might account for the amplitude difference of waves recorded from a subject tested alone, in a darkened room, and subjects tested in a lab full of students?

H. Which conditions produced the lowest alpha activity?

III. OPTIONAL Active Learning Portion**A. *Hypothesis***

B. *Materials*

C. *Method*

D. *Set Up*

E. *Experimental Results*
