

How should I set up FFT point and Average?

*For details on FFT point and Average, refer to [What are FFT point and Average?](#) in FAQ.

The analysis time of FFT (T) is decided based on the FFT point and Average from the following formula.

$$\mathbf{T = (FFT\ point / Sampling\ rate) * Average}$$

Ex.) Sampling rate : 128Hz
FFT point : 512
Average : 1
Analysis time : $(256/128) * 1 = 4$ (sec)

SleepSign calculates FFT epoch by epoch. If the analysis time is shorter than the epoch time, the rest of the waveform is excluded from the calculation of FFT (fig.1). If the analysis time is longer than the epoch time, 0 is put after the waveform of the epoch in order to calculate FFT for the specified analysis time. (fig.2).

fig.1) The epoch time: 4sec
The analysis time: 2sec

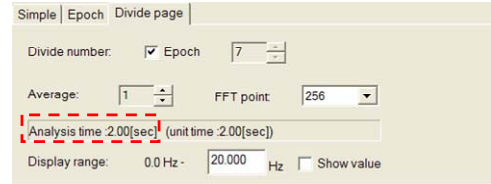
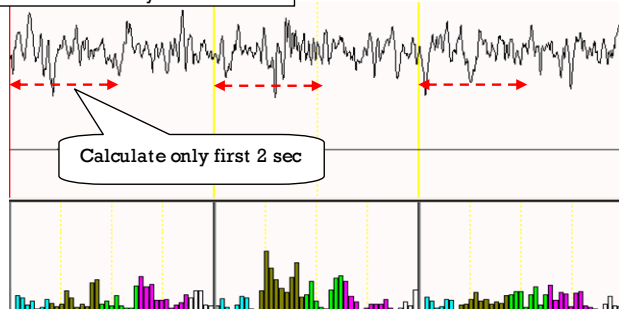
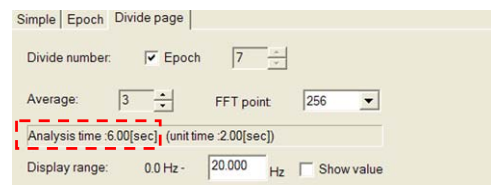
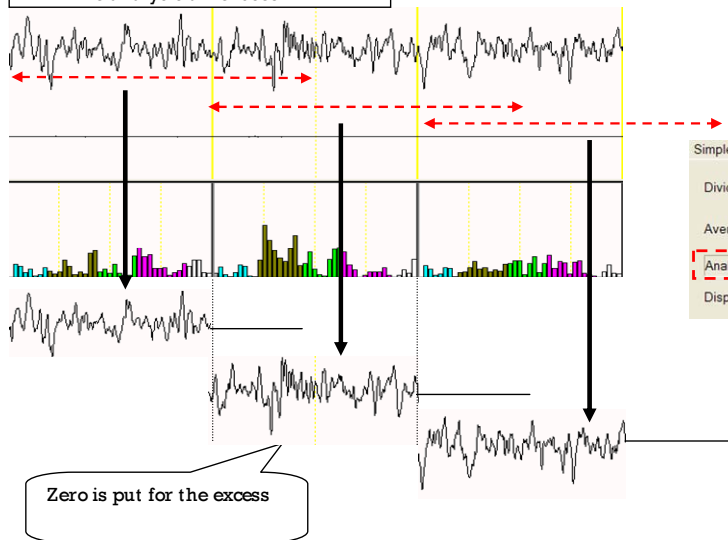


fig.2) The epoch time: 4sec
The analysis time: 6sec



Therefore, it is desirable to set the analysis time equal or nearly equal to the epoch time. In order to make the analysis time equal to the epoch time, the sampling rate has to be a power of two such as 128Hz or 256Hz.

ex.1) Sampling rate: 128Hz, Epoch time: 4sec

FFT point: 512

Average: 1

The analysis time: $(512/128) * 1 = 4$ (sec)

ex.2) Sampling rate:256Hz, Epoch time: 4sec

FFT point: 1024

Average: 1

The analysis time: $(1024/256) * 1 = 4$ (sec)

Ex.3) Sampling rate:250, Epoch time: 10sec

FFT point: 512

Average: 5

The analysis time: $(512/250) * 5 = 10.24$ (sec)

To set the FFT point and Average, refer to the following instructions



For Trend FFT

- ① Select “Sleep” – “Screening” menu
- ② “Screening” dialog is displayed. Click “Other” button.
- ③ In the next dialog, select “FFT” tab.

For Page divide FFT

- ① Select “FFT” – “Parameter” menu in the Workspace window (in lower right of the window).
- ② “Spectrum Parameter” dialog is displayed. Select “Divide page” tab.

For Epoch FFT and Average FFT

- ① Select “FFT” – “Parameter” menu in the Workspace window (in lower right of the window).
- ② “Spectrum Parameter” dialog is displayed. Select “Epoch” tab.
 - ※ Average FFT is calculated based on the Epoch FFT setting

For Simple FFT

- ① Select “FFT” – “Parameter” menu in the Workspace window (on lower right of the window).
- ② “Spectrum Parameter” dialog is displayed. Select “Simple” tab.