

## GLOSSARY

**Amplifier.** The electrodes are connected to this “box”. An active electronic circuit that yields an output which is a direct replica of the input signal, but with a larger amplitude. Names of amplifiers include: esiPro, ProComp, BrainLynx, etc.

**Amplitude.** A signal of a given frequency can be fully characterized in terms of amplitude and phase. The amplitude is the size of the signal when it has its largest value, i.e. the largest excursion from the baseline. With reference to EEGs, amplitude is usually expressed in microvolts. An irregular signal such as the EEG is best described by a more meaningful statistical measure, the “rms” (or root-mean-square) amplitude (q.v.).

**Auto-Goal or Auto-Threshold.** In EEGer, F11 can be used to set the goals (thresholds) for the training frequency bands to a preset target range.

**Battery Voltage Reading.** The number in the lower right corner of the EEG training display indicates the current voltage reading of the batteries in battery-operated amplifiers. If NONE is displayed, check the battery and connections between the computer and the amplifier. For non-battery-operated amplifiers, either OK or NONE are displayed.

**Class or Protocol Class.** The type of training being performed. There are three training classes in EEGer: Beta/SMR, Alpha/Theta, and Experimental.

**DIN Adapter.** ProComp amplifiers use a black cable with color-coded (yellow, blue, black) electrode receptacles called a DIN adapter.

**Dongle.** EEGer’s bright green USB security key that contains the sessions purchased and is required to run a session. The EEGer software license file corresponds to the number of the dongle.

**Dongle Sessions.** The number of sessions programmed onto the EEGer dongle. Access to these purchased sessions is controlled by the Remote Use Session Plan created by the supervising clinician. The client must have both Dongle and Remote Use sessions available to run a live session.

**Dongle Update.** When sessions are purchased, EEG Spectrum provides an EEGer keyfile to increase the number of sessions programmed on the EEGer dongle.

### EEG Frequencies:

**Delta.** EEG frequency band from 0.5-3.5 Hz. Slow brain-wave activity pattern associated with deep sleep.

**Theta.** EEG frequency band from 4-7.5 Hz. Theta is prominent during imagery, daydreaming, memory retrieval, sleep onset, and when distracted.

**Alpha.** EEG activity (8-11 Hz) commonly, but not always, thought to be associated with an alert but relaxed state.

**Beta.** EEG frequency band from approximately 12 to 30 Hz. Fast brain-wave activity pattern associated with a waking EEG. See Sensorimotor Rhythm.

**SMR.** Sensorimotor Rhythm. An EEG rhythm (12-15 Hertz) recorded from the central scalp and involving both the sensory and motor parts of the brain (the sensorimotor cortex), is a subset of beta rhythm that occurs over the sensorimotor cortex.

**High Beta.** EEG frequency band from 22-36 Hz. Excessive amplitudes of high beta are seen during states of high arousal, excitement, stress, body tension or anxiety. During NF for most conditions, high beta is typically inhibited.

**Gamma.** EEG frequency band from 30-100 Hz. Gamma is also known as *Sheer rhythm or binding rhythm*. Gamma-band research and NF targeting the  $\gamma$ -band are still in their infancy, but some clinicians are utilizing it to enhance peak performance.

**EEGer Keyblock License File.** The license update file used to add additional Dongle sessions. From the EEGer main screen, select Files – Read EEGer Keyblock Files. Select the appropriate location of the license file using the Windows dialog and Open the file.

**Electrode.** A conductive device (sensor) that can be used to record electrical potentials. Usually made of gold, silver or tin.

**Electroencephalogram (EEG).** Graph that records electrical activity through the skull or from the brain and represents graded potentials of many neurons.

**Frequency.** A repetitive, periodic signal is characterized by the number of periods, or cycles, per second, which is referred to as its frequency. The unit of frequency is Hertz. EEG signals encompass a frequency range extending from dc (zero frequency) to greater than forty Hertz. Harmonics of such fundamental EEG signals can extend to much higher frequencies.

**Hemisphere.** Literally, half a sphere, referring to one side of the cerebral cortex or one side of the cerebellum.

**Hertz (Hz).** The unit of frequency equal to one cycle per second (the term Hertz officially replaced "cycles per second" in 1960 by the International System of Units (SI))

**Impedance.** The degree of opposition to an alternating current by an electrical circuit. For EEGer, a low impedance reading indicates a good connection for the electrode placement. Higher impedance indicates a bad connection or damaged component (e.g., electrode or adapter).

**Inhibit.** The EEG frequency range(s) the supervising clinician has programmed to help reduce the amplitude produced in a given frequency range.

**Neurofeedback.** The term that typically refers to EEG feedback designed to alter a condition for which there is evidence of a neural basis. A form of EEG biofeedback training.

**Period.** Games are played in time segments separated by time to rest. Each segment of game play time is called a period.

**Protocol.** The combination of electrode placement, training modes and frequency settings used to run a session.

**Raw EEG or Raw Trace.** The total EEG for a particular protocol site placement. Raw EEG is displayed on the first and/or second lines (traces) of the EEGer therapist display.

**Remote Use Storage Device or Remote Use Flash Drive.** A removable USB drive is programmed by the supervising clinician to store the details for EEGer Neurofeedback training.

**Remote Use Session Plan.** The training plan created by the supervising clinician to control the location and settings for the sessions to be performed, number of sessions permitted and the time period in which the sessions may be completed.

**Remote Use Expiration.** The Remote Use Session Plan is created for an amount of time specified by the supervising clinician. This allows the clinician to review the client's progress and make changes to the training if necessary.

**Remote Use Sessions.** The number of Neurofeedback sessions permitted is controlled by the Remote Use Session Plan created by the supervising clinician. Both Remote Use and Dongle sessions must be available for the client to run a live session. Remote Use Sessions may also expire.

**Remote Use Update.** The supervising clinician can renew or change the Remote Use Session Plan either by re-initializing the Remote Use Flash Drive or creating an update file that can be emailed and installed onto the existing Remote Use Flash Drive using *Files-Read Remote Use Update* in EEGer.

#### **Reward.**

1. The EEG frequency range(s) the supervising clinician has programmed to help increase the amplitude produced in a specified EEG frequency range.
2. The point, beep, or other feedback mechanism that indicates the client's EEG reading meets all the criteria set for optimal training.

**Scale.** The magnification or zoom factor for a frequency displayed. Similar to map scale (vs. % scale), the smaller the scale value, the larger the magnification. Changing scale only affects training if the size of the wave prevents the threshold setting to be viewed within the display area for the frequency.

**Stage.** If more than one protocol is used, the time each one runs is referred to as a "stage".

**Threshold.** The amplitude goal for a frequency band, which in EEGer is indicated by blue lines. Increasing or decreasing the threshold goals controls the challenge factor for the game.

**Voltage.** Voltage is the electromotive force applied to an electronic circuit. It is the electrical potential that develops when charges are separated, as in a battery or other common voltage source.