

EEG DATA ANALYSIS

The EEG Data Analysis feature was developed by Duke University and patented by and exclusively licensed to MECTA to provide the capability to assist the physician in the assessment of post-stimulus EEG signals, using a patented algorithm developed over years of acquired treatment data. **These two measures, Seizure Adequacy and Stimulus Level are the only Duke University developed and patented analysis features. MECTA is the only company licensed to include the Duke University EEG seizure quality measures in its products.** **

MECTA's percent Seizure Adequacy and Stimulus Level** estimates are the ONLY existing ECT indices that were developed with actual clinical stimulus dosing and treatment response data and that have been shown to have a significant relationship to outcome.** These estimates are the culmination of more than ten years of research. Their development and testing with seizure EEG, stimulus dosing, and outcome data from a large clinical ECT population is detailed in peer reviewed scientific literature. The first step in deriving these measures is to compute the FFT (fast Fourier transform) of the EEG Data recorded during the ECT seizures. These FFT indices are of limited utility, since there are no studies providing clinicians guidance as to how they might be used in clinical practice.

However, MECTA is unique in performing further computation with these indices to provide clinicians with the percent Seizure Adequacy** and Stimulus Level** measures that have been demonstrated to be of clinical relevance (Krystal AD. The clinical utility of ictal EEG seizure adequacy models. *Psychiatric Annals*. 1998;28:30-35). This Duke University patented procedure is exclusively licensed to MECTA. DSP software, developed by MECTA, integrates this Duke developed algorithm into the SPECTRUM, providing clinicians with an empirically-based means to predict seizure adequacy and regulate stimulus dosing.

Please review your MECTA Instruction Manual for information on the use of this feature. In addition, we wanted to inform you of several additional points to ensure the accuracy of this feature:

1. EEG Data Analysis use with Ultrabrief Parameter Menu Set 4:
The ultrabrief parameter set menu 4 cannot be used with the EEG Data Analysis feature. The algorithm does not yet incorporate treatment data for ultrabrief treatment parameters (0.3 msec pulse width). The EEG Data Analysis will be turned off automatically if you select the fourth ultrabrief parameter set. It **MUST BE** turned back on again using the touch screen menus when the first three parameter sets are used. Future updates to the algorithm will incorporate the ultrabrief feature.
2. To ensure the accuracy of the algorithm, allow the chart recorder to run and do not push the chart recorder's OFF button or the LCD's DONE button **until at least 20 seconds** of relatively artifact-free postictal data has been recorded. Accuracy is also increased by the inputting of the patient treatment data using the Patient Data Menu.
3. The algorithm has not been developed or tested with data from ECT administered with bi-frontal electrode placement as this form of treatment has not yet been empirically established to be of utility.



**Duke U.K. Patent #2 304 196 B - U.S. Patent #5,626,627 (Under exclusive license from Duke University)