

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. **This measure, Seizure Adequacy is the only Duke University developed and patented analysis feature. MECTA is the only company licensed to include the Duke University EEG seizure quality measure in its products.****

MECTA's percent Seizure Adequacy estimate is the ONLY existing ECT index that was developed with actual clinical stimulus dosing and treatment response data and that has been shown to have a significant relationship to outcome.** This estimate is 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 this measure is to compute the FFT (fast Fourier transform) of the EEG Data recorded during the ECT seizures. This FFT data is of limited utility, since there are no studies providing clinicians guidance as to how it might be used in clinical practice.

However, MECTA is unique in performing further computation with this index to provide clinicians with the percent Seizure Adequacy** measure that has been demonstrated to be of clinical relevance (Krystal, A.D. 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 the Ultrabrief 0.3 and Brief Pulse 0.5 Parameter Menu Sets:

New OPTIMIZED (1.0 ms) and Historical FULL SPECTRUM DOSING Parameter Sets can be utilized with the EEG Data Analysis feature. The OPTIMIZED DOSING Parameter Set (0.3 ms and 0.5 ms) cannot be used with the EEG Data Analysis feature as the algorithm does not yet incorporate treatment data for these two treatment sets. The EEG Data Analysis will be turned off automatically if you select the 0.3 ms and 0.5 ms parameter sets. It MUST BE turned back on again using the touch screen menus when the 1.0 ms or FULL SPECTRUM DOSING Parameter Sets are used. Future updates will incorporate the parameter sets into the 0.3 ms and 0.5 ms algorithm.

- 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.
- 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.

TREATMENT RESULTS	
CHARGE	115 mC
ENERGY	25.4 J
STAT. IMPED.	280 ohms
DYN. IMPED.	301 ohms
PULSE WIDTH	0.30 msec
FREQUENCY	30 Hz
DURATION	8.000 sec
CURRENT	800 mA
5/04/2011 13:07:39	
ADEQ 71%	
PATIENT ID 05042011	
AGE 50 TREATNUM M2 2UL	

PATIENT'S NAME	

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