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USER REFERENCE GUIDE
ANALYSIS APPLICATION

Manual



ELECTRODERMAL
ACTIVITY
(EDA)

Safety

Warning Regarding Medical and Clinical Use of MindWare Technologies LTD Products.

MindWare Technologies LTD products are not designed with components and testing for a level of reliability suitable for use in treatment and diagnosis of humans or as critical components in any life support systems whose failure to perform can reasonably be expected to cause significant injury to a human. Applications of MindWare Technologies LTD products involving medical or clinical treatment can create a potential for death or bodily injury caused by product failure, or by errors on the part of the user or application designer. Any use or application of MindWare Technologies LTD products for or involving medical or clinical treatment must be performed by properly trained and qualified medical personnel, and all traditional medical safeguards, equipment, and procedures that are appropriate in the particular situation to prevent serious injury or death should always continue to be used when MindWare Technologies LTD products are being used. MindWare Technologies LTD products are NOT intended to be a substitute for any form of established process, procedure, or equipment used to monitor or safeguard human health and safety in medical or clinical treatment.

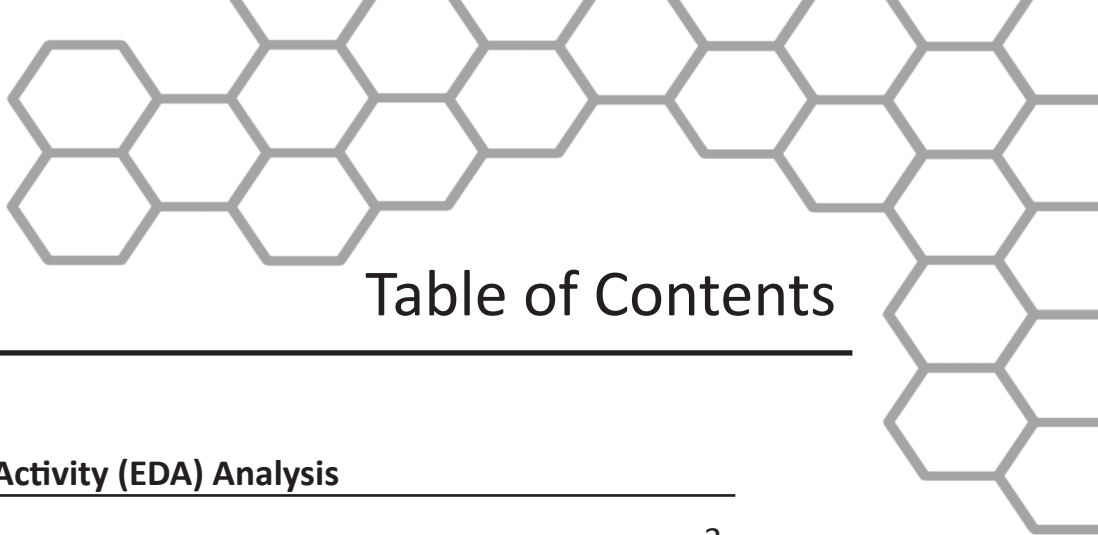


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MindWare Electrodermal Activity (EDA) Analysis

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Section 1

Although each data type in the file can be defined, not all channels must be assigned a specific data type. For analysis EDA, dZ/dt or Z0 or Respiration, and Event Channels (if applicable) can to be selected. Any channel defined other than these types will be ignored.

Refer to Image A,

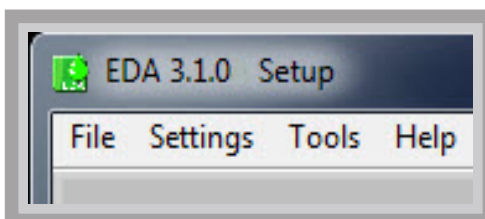
- (1) **File:** This indicator displays the path and name of the file under analysis.
- (2) **Channel Labels:** A list of the channels available for use in analysis
- (3) **Channel Types:** Specifies the physiological channel type for each channel. For basic EDA analysis, only the EDA channel is required. The Event channel must be defined for any of the event-based analysis modes. Either Z0, dZ/dt, or Resp channel must be mapped to view respiration.
- (4) **Total Time(s):** This indicator displays the total time as read from the input file (in seconds.)
- (5) **Sampling Frequency (Hz):** This indicator displays the Sampling Frequency as read from the input file.
- (6) **Application Name:** This indicator displays the analysis application that is currently running.

Once the desired channels have been mapped, **press OK to continue** to the Setup screen.

Section 2

Setup

The “Setup screen” contains many options pertaining to the way in which the analysis is performed. All changes to settings in the Setup screen are saved to a configuration file automatically whenever analysis is initiated or the application is exited.



File:

Open: Open a different file for analysis

Map Channels: Change the channel map for the current file

Scaling and Filtering Settings: Details the scaling and filtering information as it was applied to the channels during acquisition.

Export Events: Export events from an MWI file to a text file.

Exit: Exits the analysis application.

Settings:

Open Configuration: Allows a previously saved configuration file to be opened.

Save Configuration As: This option saves all current settings in the Setup screen to a configuration file which can later be recalled.

Reinitialize All to Default: This option will return all settings in the setup screen to factory default.

Tools:

ASCII-MW Converter: The ASCII-MW Converter allows the conversion of any text file containing data in some character-delimited columns to the .mw format so that it may be used in any application (See Appendix A).

Build MWI: Builds an MWI file from an existing MWX file (needed for analysis of MWI files and viewing of data collected locally on a MindWare Mobile).

About:

Check for Updates: **This option requires an internet connection** Checks for newer versions of software and drivers. This check will happen automatically unless it has been disabled from the update window.

Show Help: This option opens a small window containing descriptions of the controls available on the screen. Hover over the desired control to view its description.

Section 2

About MindWare: Opens a small window with information about MindWare Technologies and the analysis application

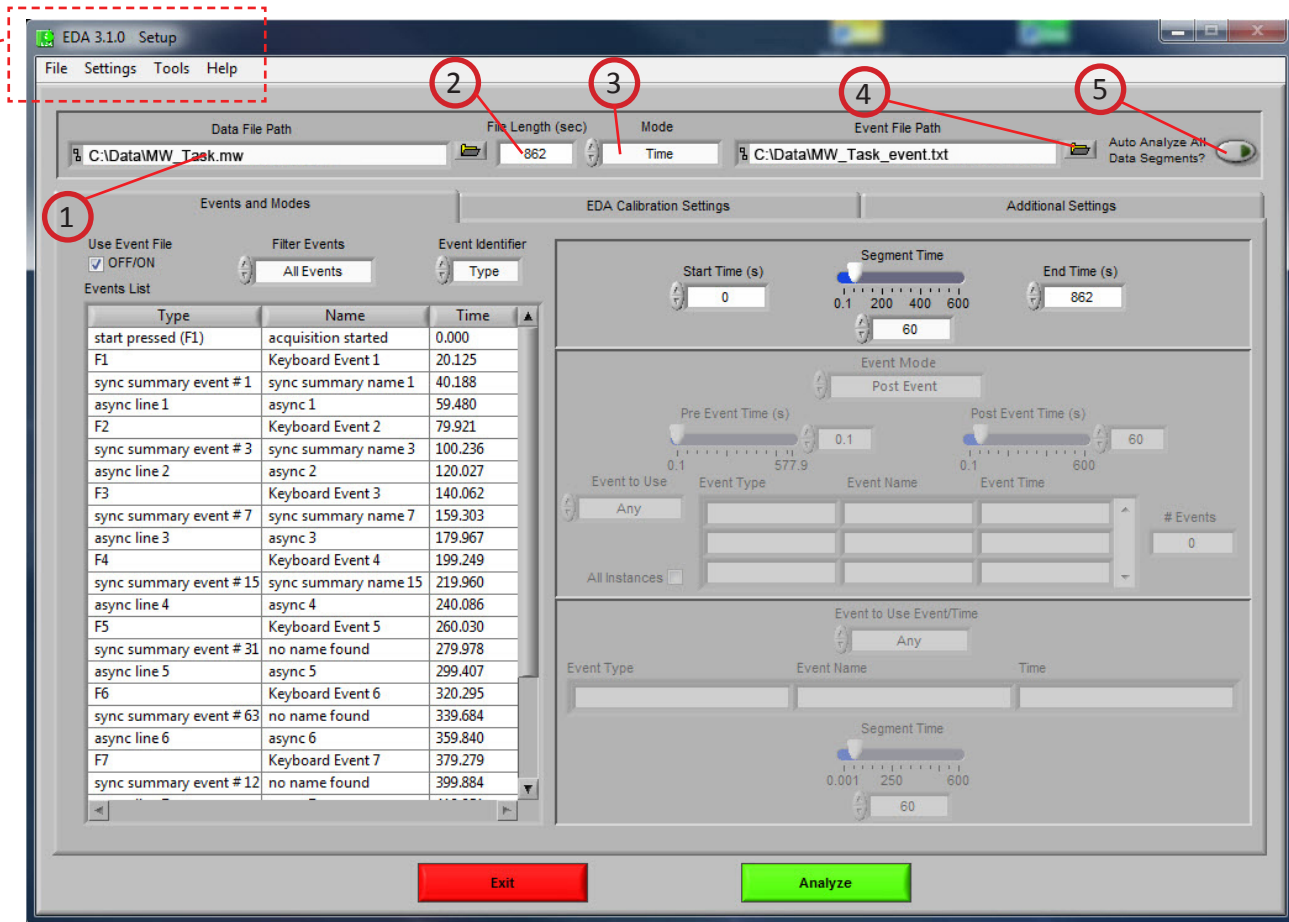


Image B

Refer to Image B,

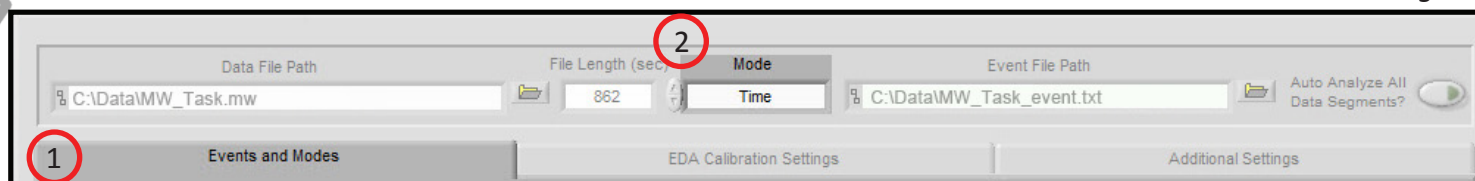
- (1) **Data File Path:** This control shows the current file selected for analysis. Also, by clicking the browse button a new file may be selected for analysis.
- (2) **File Length(s):** This indicator shows the total file length in seconds.
- (3) **Mode:** This control allows the user to select one of three analysis modes: Time, Event, and Event & Time. The value of this control determines which controls are enabled on the Events and Modes tab.
- (4) **Event File Path:** If a BioLab event file is being used for analysis, the path of that event file is shown in this indicator.
- (5) **Auto Analyze All Data Segments:** When this control is activated, the application will automatically analyze each segment of the dataset and output it to the specified location.

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Setup: Events and Modes

Image C



The *Events and Modes* section (**1, Image C**), allows the user to select one of the many modes available to use to index through the dataset.

The left side of the screen shows all events in the file from Event channel, BioLab event file, or MWI files with the event name, type, and time. There are three controls for specifying the way in which the events are viewed:

Use Event File: When checked the events displayed are from the selected event file. Otherwise they are detected in the channel mapped as Event.

Filter Events: The events shown in the list and used for analysis can be filtered by type to use summary events, keyboard events, individual events, or all events.

Event Identifier: This control specifies how the event will be labeled when it is shown in the analysis window.

Select Mode (2, Image C)

Time Mode (Image D): In time mode, the following parameters are available:

Start Time (9): Used to set the time at which the first analysis segment will start.

Segment Time (10): Specifies the length of each segment, starting at the start time and splitting the remainder of the file into equal length segments.

End Time (11): Used to set time at which the last analysis segment will end.

Event Mode (Image D): The list to the left (**8**) of the event controls displays all of the events detected in either the BioLab Event File or the channel mapped to “Event”. This can be changed by either marking or unmarking the box named “Use BioLab Event File” above the event list. This list can be filtered by type, including Keyboard, Individual, Summary, or All Events. Also, the type of label which will be displayed on the event during analysis can be set by using the “Event Identifier” control.

Section 2

There are 6 viewing modes available in event mode **(1)**:

Pre Event: The Pre-Event Time slider **(6)** specifies the number length of the data before the specified event that is included in the segment.

Post Event: The Post-Event Time slider **(7)** specifies the length of the data after the specified event that is included in the segment.

Pre + Post: This is a combination of the previous two modes in which both the length of the data before and after a specified event can be set.

Pre and Post: Application will focus on data before a specified Pre event and after specified post event.

Event to Event + Time: Post Event Time slider specifies a amount of time to segment analysis between the chosen events.

Event to Event: In this mode, the length of the segment is defined by the time in between the current event and the next event in the list.

For each of these event modes, there is the option of either using any event in the list or specifying a certain event to view. A specific event can be chosen from the event list by first selecting “User Defined” in the Event to Use box **(2)**, and then selecting the desired event from the list that will appear in the box labeled “Event Type” **(3)**. User Defined events also enable the ability to select all events with identical names for analysis with the “All Instances” **(5)** check box. In Event to Event mode, two specific events to go between can be selected. The number of events box **(4)** shows the total number of events of the specified type which will be shown during analysis.

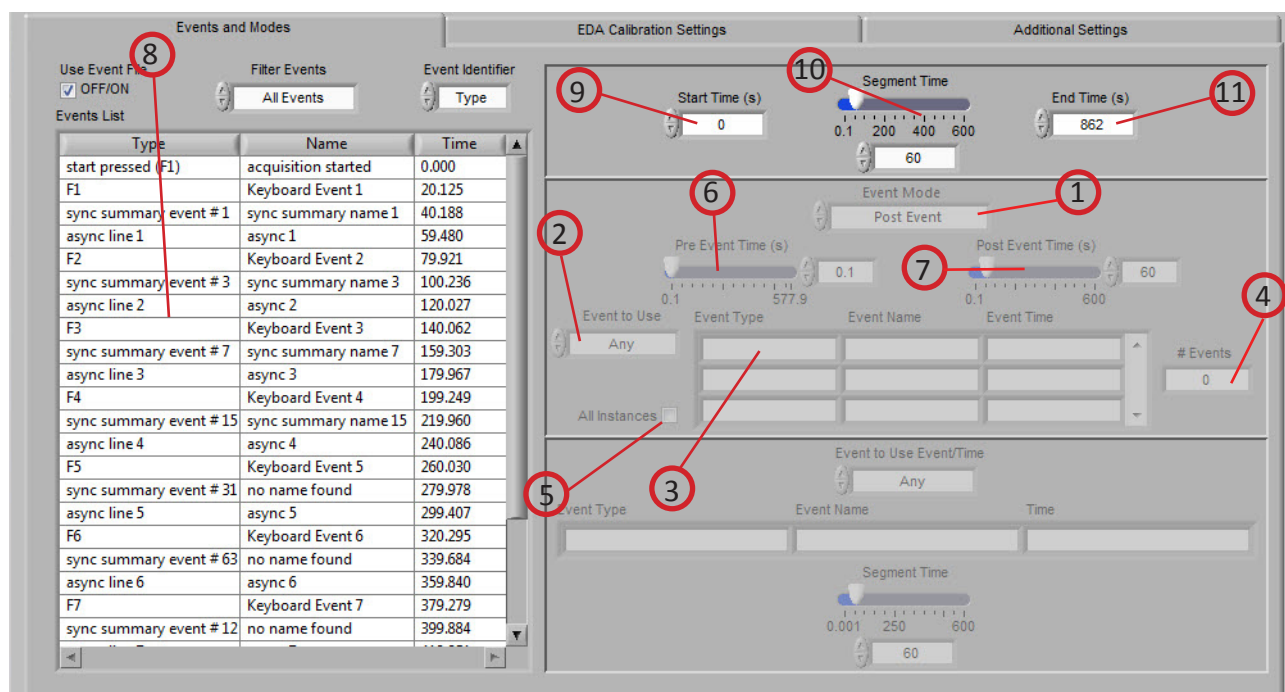


Image D

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Event and Time (Image E): Event and Time mode combines the previous two modes to allow the selection of a specific event to use as a starting point and then to proceed through analysis in time mode from that point. The following parameters are available:

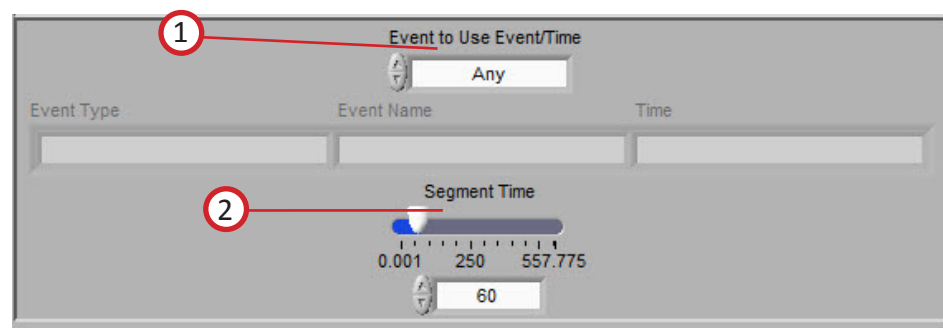


Image E

Event to Use Event/Time (1): Behaves similarly to Event mode, where “Any” will simply use whichever event is next in the list and proceed from that point and “User Defined” will proceed in time mode from the location of the specified event. The event can be specified by selecting the desired event in the event list and dragging it to the box below

Segment Time E&T (2): Specifies the length of each segment, starting at the location of the specified event and splitting the remainder of the file into equal length segments

Setup: EDA Calibration Settings

The second tab on the screen, titled EDA Calibration Settings (**Image G**), allows the user to define a respiration source, define a calculation method, and set parameters for detecting an event-related SCR.

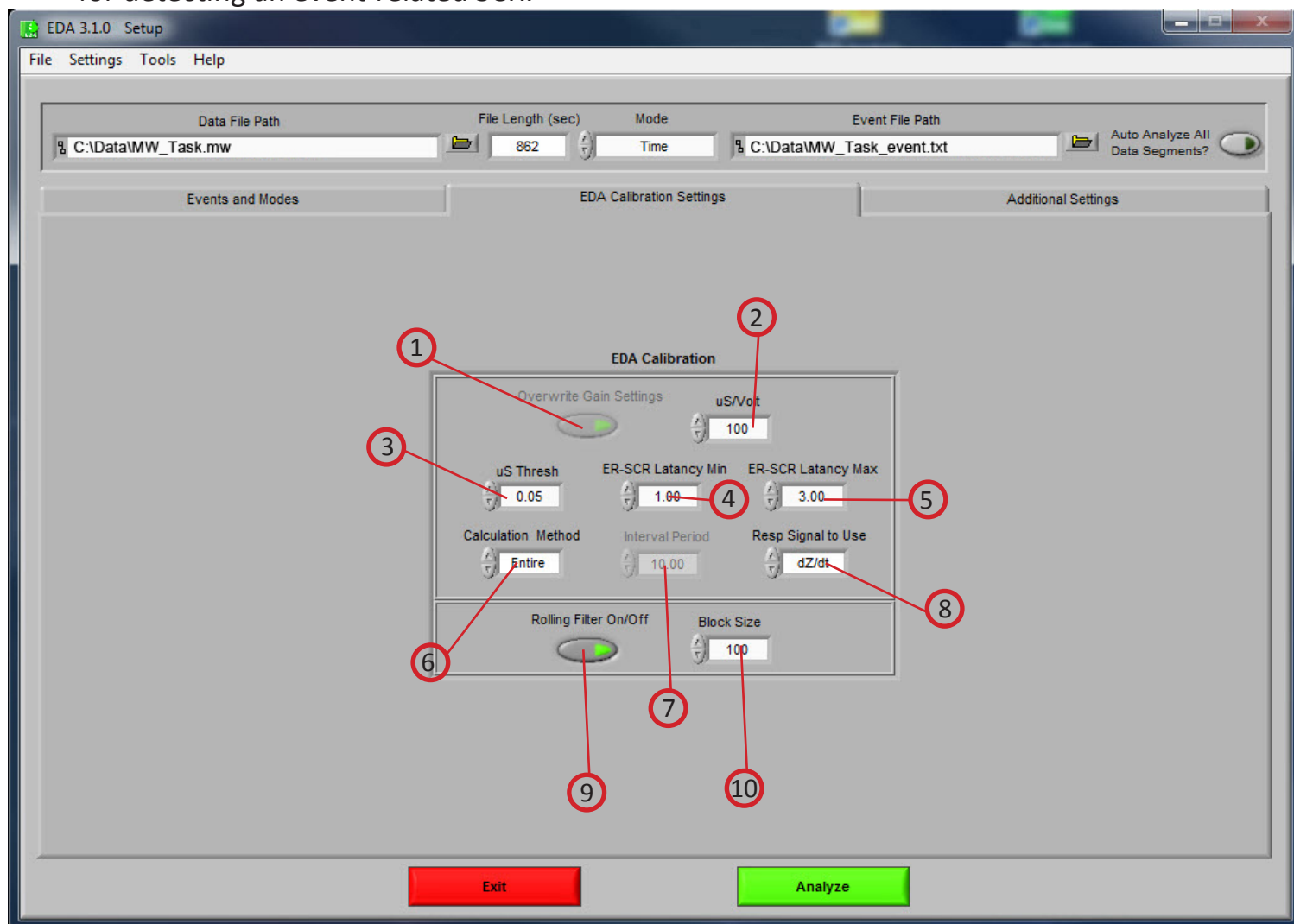


Image G

Overwrite Gain Settings (1):

uS/Volt (2): This control represents the ratio of uSiemens to Volts for the EDA amplifier. This is typically a hardware selection on the amplifier and may change on a subject to subject basis depending on the baseline conductance. This value is required for the conversion of volts to uSiemens. When analyzing MindWare files, this value is read from the header and initialized to the appropriate uS/Volt.

Section 2

uS Threshold (3): This control sets the threshold level in uSiemens to be used for detecting a skin conductance response. This value is the difference from a response trough to peak excursion. A difference equal to or greater than this threshold will be quantified as a response. A typical response level should be set to .05 uSiemens.

ER-SCR Latency Min (4): This control (Event Related Skin Conductance Minimum Response Latency) applies when data is being scored in an event mode. This control sets the window (in seconds) from an event and defines the minimum latency of a trough to be classified as an Event Specific Skin Conductance Response. The latency of a response with a trough that lies less than this will be determined to be a non-specific response.

ER-SCR Latency Max (5): This control (Event Related Skin Conductance Maximum Response Latency) applies when data is being scored in an event mode. This control sets the window (in seconds) from an event and defines the maximum latency of a trough to be classified as an Event Specific Skin Conductance Response. The latency of a response with a trough that lies greater than this will be determined to be a non-specific response.

By this definition, the time of an event related skin conductance response trough must fall at a time that is greater than or equal to the value set in ER-SCR Latency Min and less than or equal to the value specified in ER-SCR Latency Max.

Calculation Method (6): This control defines the mode for which the mean skin conductance will be determined. There are two selections available: Entire and Interval. In Entire mode, mean skin conductance will represent the value across the total window period defined in the Events and Modes tab. In Interval mode, the window period will be the same as in the Entire mode however these measures are divided into fixed time bins as set by the Interval Period and will represent the mean tonic skin conductance values in these intervals.

Interval Period (7): This control specifies the length of each interval in seconds. (Only applies when interval mode is selected)

Respiration Signal to Use (8): This control selects the source to use to derive respiration measures. The options available are Resp, dZ/dt, Z0 or none.

Rolling Filter On/Off (9): This control toggles the Rolling Filter on or off.

Block Size (10): This control sets the bin size for the rolling filter.

Section 2

Setup: Additional Settings

The last tab on the screen, titled Additional Settings, allows the user to select settings for incorporating video in analysis, the use of edited data, and the type of output file created.

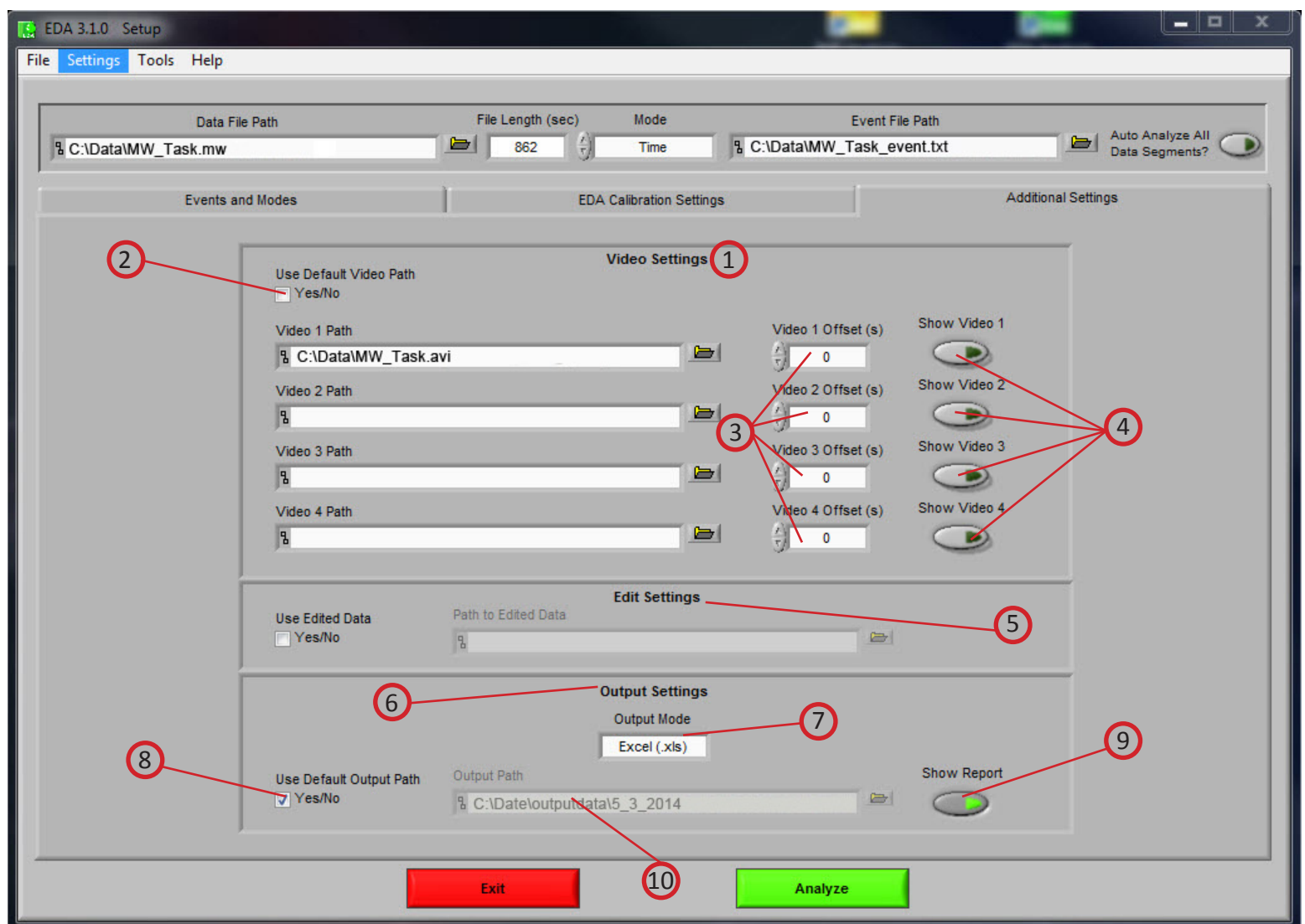


Image 1

Section 2

Refer to Image I,

Video Settings (1): The following parameters are available regarding video playback during analysis:

Use Default Video Path (2): This selects whether the default video associated with the file will be used, or a video can be specified in its place. Up to 4 videos can be associated with analysis file.

Video Offset (3): These settings allow video playback times to be offset individually for each video file.

Show Video (4): Sets whether the video will be shown during analysis or not.

Edit Settings (5): If there is edit data associated with the current file, it can be selected here and will be used for analysis. Otherwise, only the data within the file will be used.

Output Settings (6): The following parameters are available to specify the type and location of the output files:

Output Mode (7): Output statistics are written to an Excel file.

Use Default Output Path (8): The default output location is a folder named *output data* in the folder which contains the file being analyzed. Within the *output data* folder, files are organized in folders by the date on which they were analyzed. If any of these folders don't exist, they are automatically created when the first output file is written to that directory. A different location to save these files can also be specified in the file box.

Show Report (9): When turned on, the excel spreadsheet will be opened and written to as the user writes segments to the report. When turned off, the spreadsheet will be written following analysis and saved to the specified directory but never opened.

Output Path (10): This area shows the file location for the output. Desired path can be changed by clicking the folder icon and choosing preferred location.

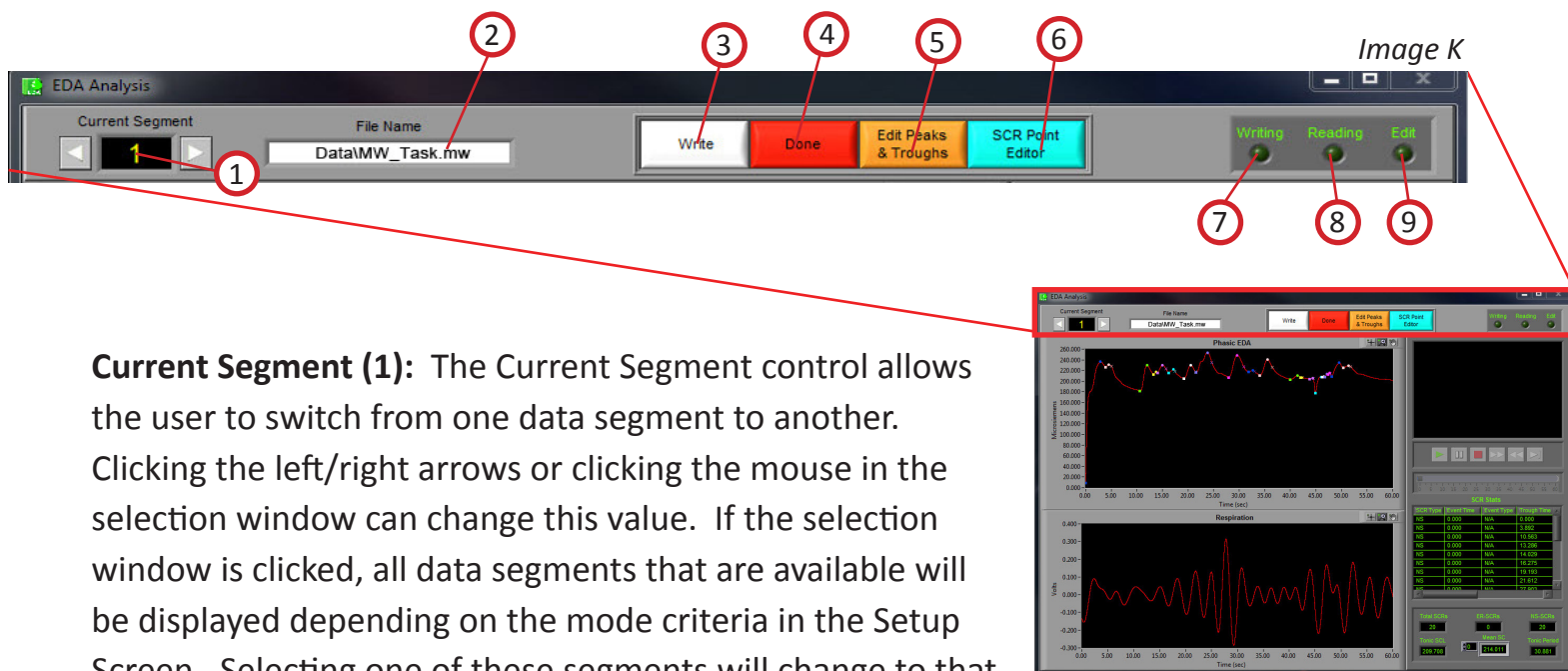
Section 3

Analysis

Once all Pre-Analysis settings are set the analysis can be performed by pressing the green analyze button at the bottom of the screen.



The Controls panel is the interface for sequencing through each data segment as well as viewing the program status indicators, editing data, and writing the output file. From here, the user can select the next data segment to analyze, write the statistical information to the output file, or quit to return back to the Setup screen.



Current Segment (1): The Current Segment control allows the user to switch from one data segment to another. Clicking the left/right arrows or clicking the mouse in the selection window can change this value. If the selection window is clicked, all data segments that are available will be displayed depending on the mode criteria in the Setup Screen. Selecting one of these segments will change to that data segment. Pressing the “Page-Up” and “Page-Down” keys allows the user to cycle through the Segments.

File Name (2): This indicator displays the name of the data file being analyzed.

Write (3): The Write control is used to write the analysis results for the current segment into the output format specified during setup. This button must be pressed after each segment or the results will not be saved. If data for this segment already exists in the file, it will be overwritten.

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Done (4): This control is used to terminate the current session and return the user to the Setup screen.

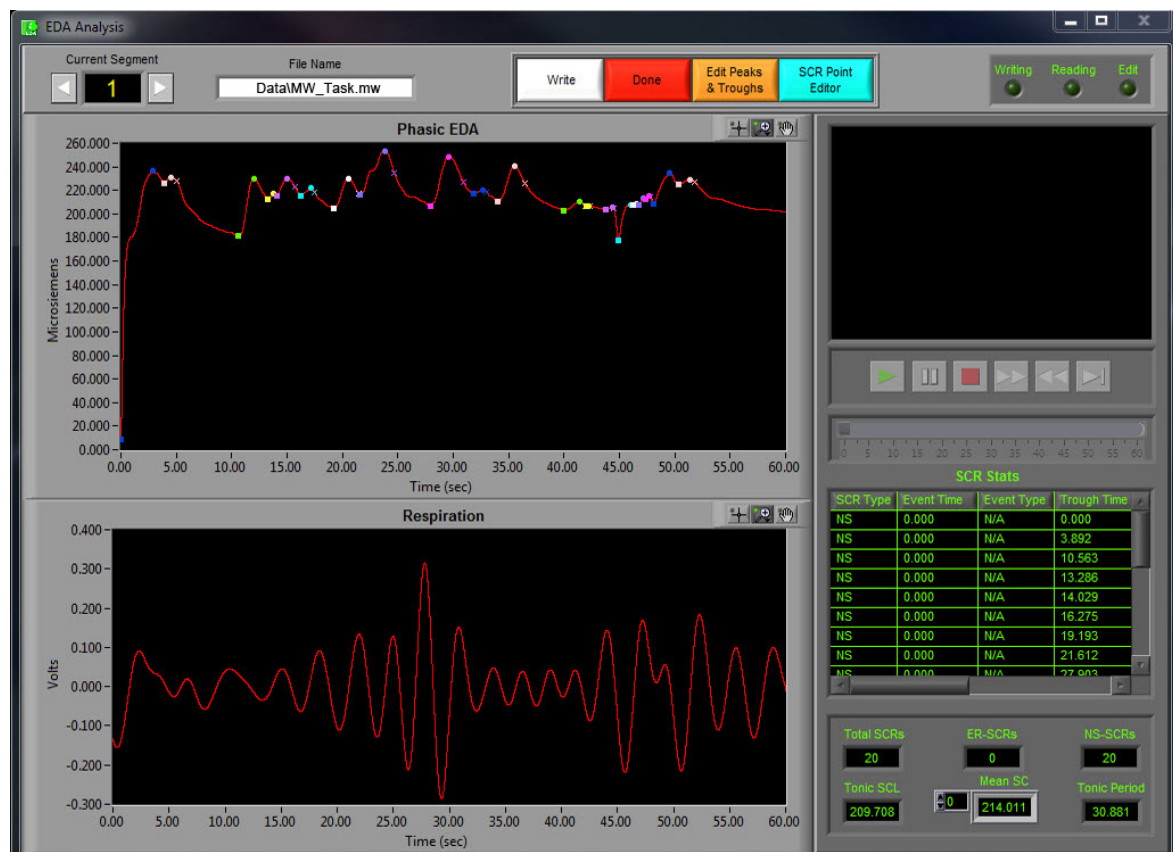
Edit Peaks and Troughs (5): The Edit control switches the window to the graphical editor. The user can insert, delete or move a marker allowing for the correction of any movement artifact or to manually adjust the values as derived by the peak detector. The user is also able to remove data portions.

SCR Point Editor (6): This control switches the window to the SCR point editor, which allows the user to correct the location of both the peak and trough of a detected SCR.

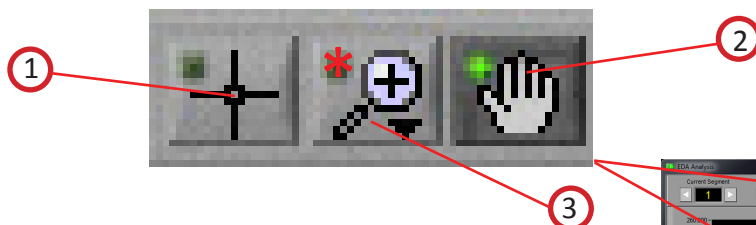
Writing (7): The Writing indicator will be illuminated when the current segment results are being written to the output spreadsheet.

Reading (8): The Reading indicator will be illuminated when the current data file is being read.

Edit (9): The Edit indicator will be illuminated when edited data is being used. This will be on when the user exits the editor or is using a previously edited session.



Section 3



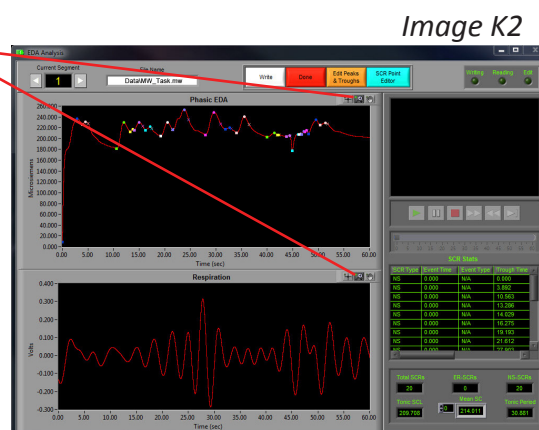
Plot Interaction Tools (Image K2):

These icons allow the user to interact with the plotted data

Crosshair Tool (1): Default tool, allows non-interactive navigation of plotted data.

Hand Tool (2): Allows user to move plotted data by clicking and dragging to desired position.

Zoom Tool (3): Can be used to visually zoom in and out of plotted data by selecting desired zoom method.



Zoom Methods (Image K3): The zoom tool has multiple methods of interaction.

Selection Zoom (1): Zooms into area by clicking and dragging selection box over desired position.

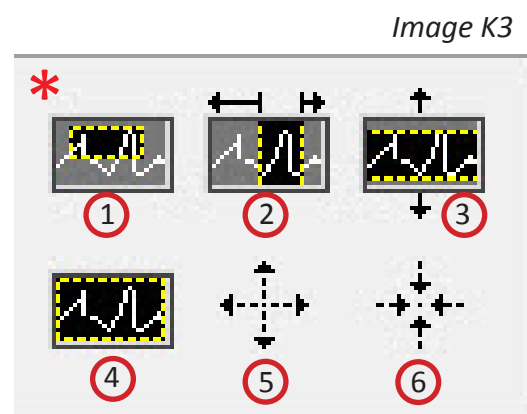
Zoom X (2): Zooms along the x-axis.

Zoom Y (3): Zooms along the y-axis.

Reset: (4): Resets view to default.

Zoom In (5): Zooms in by clicking

Zoom Out (6): Zooms out by clicking



Section 3

Analysis: EDA Analysis

The EDA Analysis screen displays the analysis window for the selected data segment.

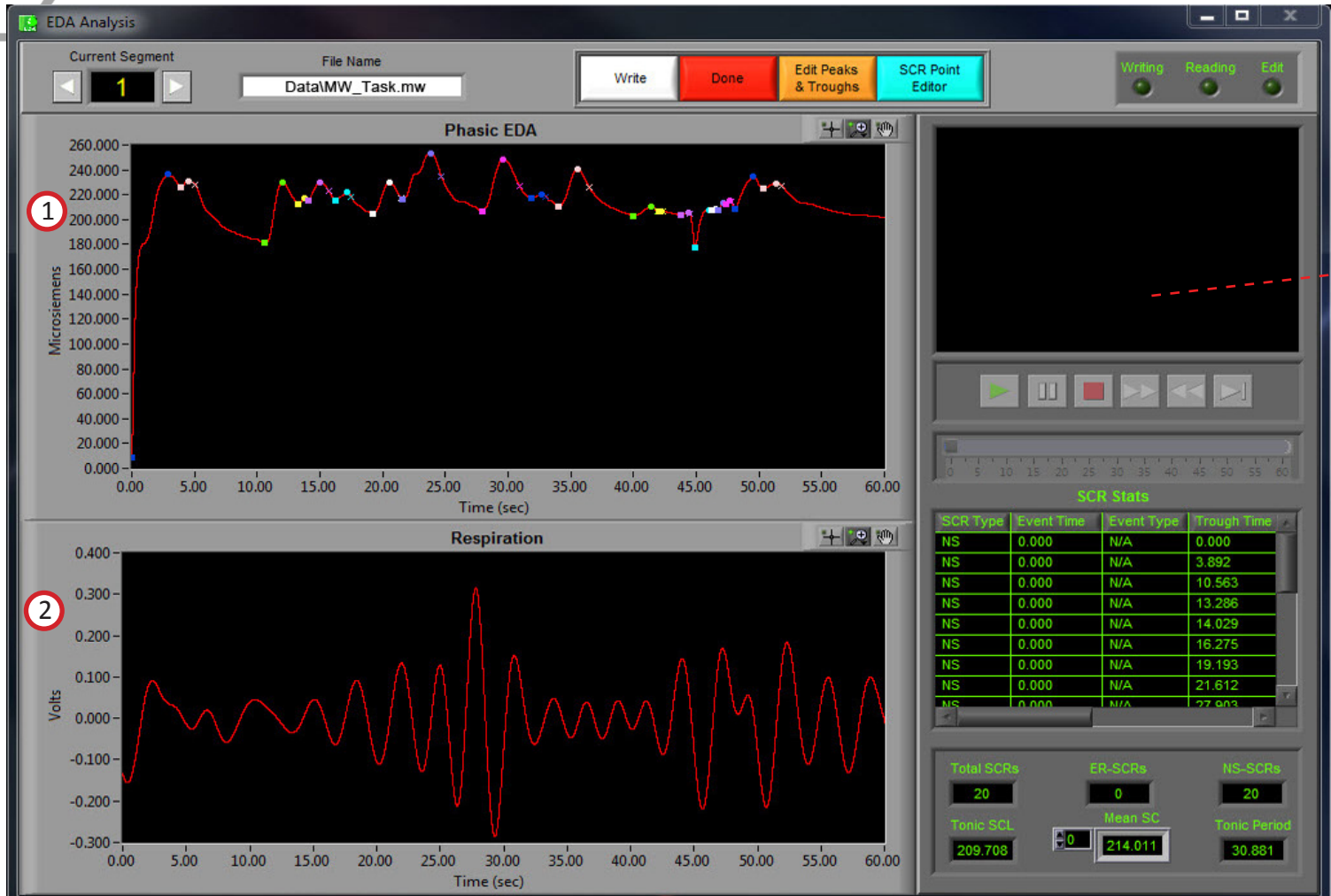


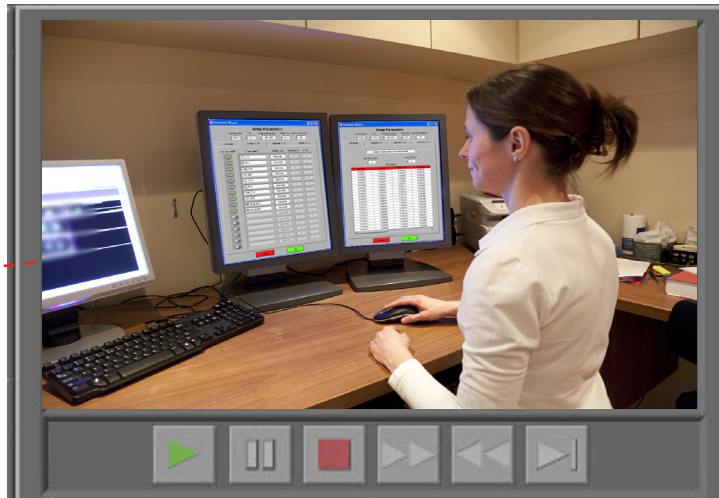
Image L

There are two plots visible on this screen (Refer to *Image L*):

Phasic EDA (1): The values plotted on the Phasic EDA window are an analog waveform. Each detected SCR has a color associated with it. The trough, peak, and half recovery time (if applicable) of each SCR is denoted by a dot of the same color. Also shown on this plot are the event markers and the position cursor. The event markers are labeled with either the event name or type (as specified in the Setup screen) and are color coded by type (Keyboard = Green, Summary = Orange, Individual = Blue). The position cursor can be dragged anywhere within the current dataset, at which point the video will be updated to reflect this new position.

Respiration (2): The values plotted in this window are the respiration time series.

Section 3



Video Controls (Refer to *Image M*):

In the upper right hand corner of the screen, the video selected during setup is displayed. Below it are the various video playback controls:



Play: This control initiates playback of the video at normal speed from the specified location.



Pause: This control pauses playback of the video at the current location.



Stop: This control stops playback of the video and returns to the start of the segment.



Fast Forward: This control speeds playback of the video up to 2x normal speed.



Rewind: This control rewinds the video at 2x normal speed.



Slow: This control slows playback of the video to half normal speed.

Section 3

Position Slider (1): This control reflects the current position in both the physiological data and the video playback. It can be dragged to a certain location, at which point the video and the position cursor in the plotted data will be updated to reflect the new position.

Note: By pressing CTRL+U the video will be removed from the analysis window and re-opened in its own resizable, floating window (3). To return the video to the analysis window, press CTRL+D

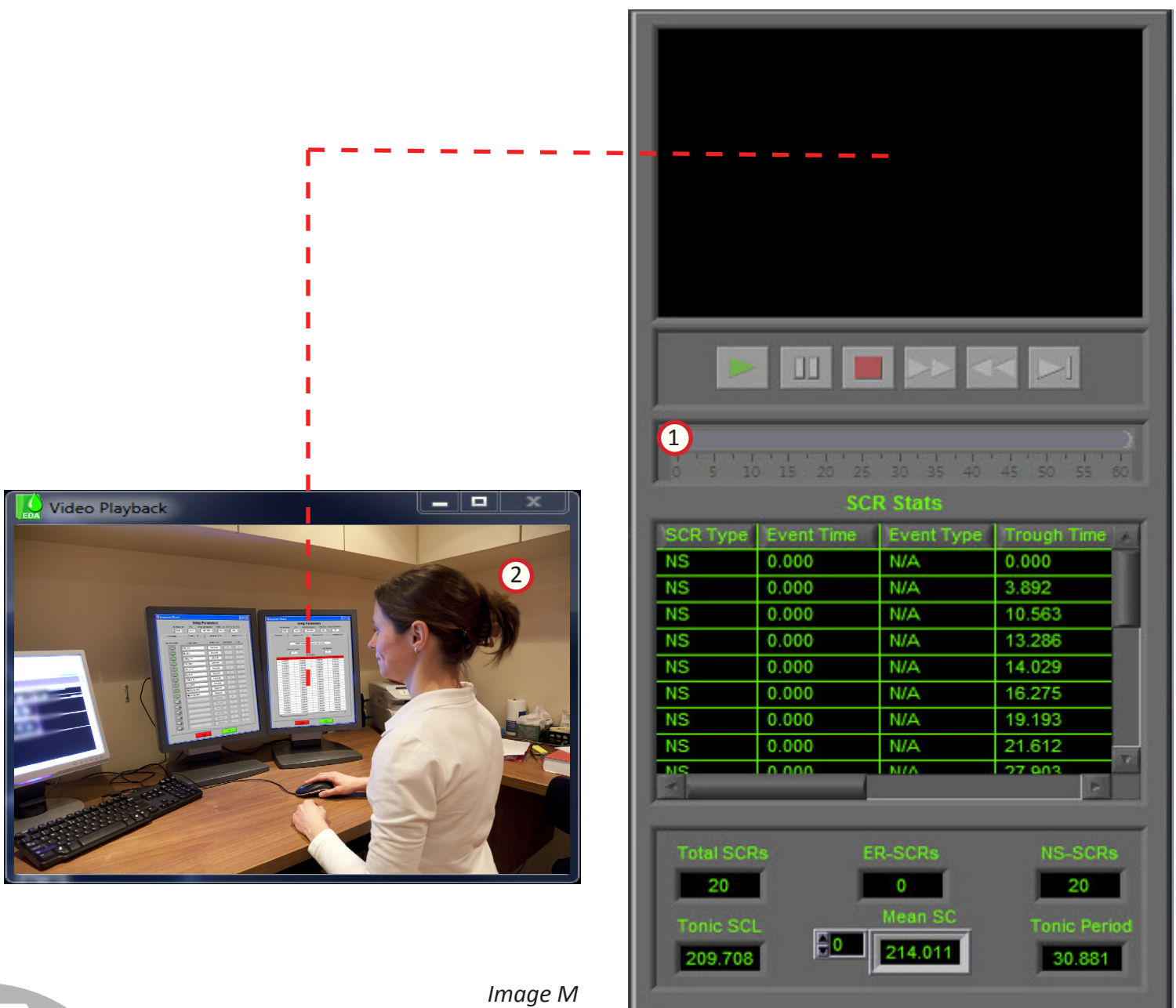


Image M

Section 3

Calculated Statistics (Refer to *Image N*):

Below the video/ensemble plot and the video controls, in the lower right hand corner of the EDA Analysis screen are the calculated stats about the current data segment:



SCR Type	Event Time	Event Type	Trough Time
NS	0.000	N/A	0.000
NS	0.000	N/A	3.892
NS	0.000	N/A	10.563
NS	0.000	N/A	13.286
NS	0.000	N/A	14.029
NS	0.000	N/A	16.275
NS	0.000	N/A	19.193
NS	0.000	N/A	21.612
NS	0.000	N/A	27.903

Total SCRs	ER-SCRs	NS-SCRs
20	0	20
Tonic SCL	Mean SC	Tonic Period
209.708	214.011	30.881

Image N

SCR Stats (1): An array of statistics representing the following values (**Scroll to see all stats**):

SCR Type: This field specifies whether an SCR is event-related or non-specific.

Event Time: If the SCR is event-related, then this specifies the time of the related event.

Event Type: If the SCR is event-related, then this specifies the type of the related event.

Trough Time: Specifies the time of the trough associated with each SCR.

Peak Time: Time of the peak associated with each SCR.

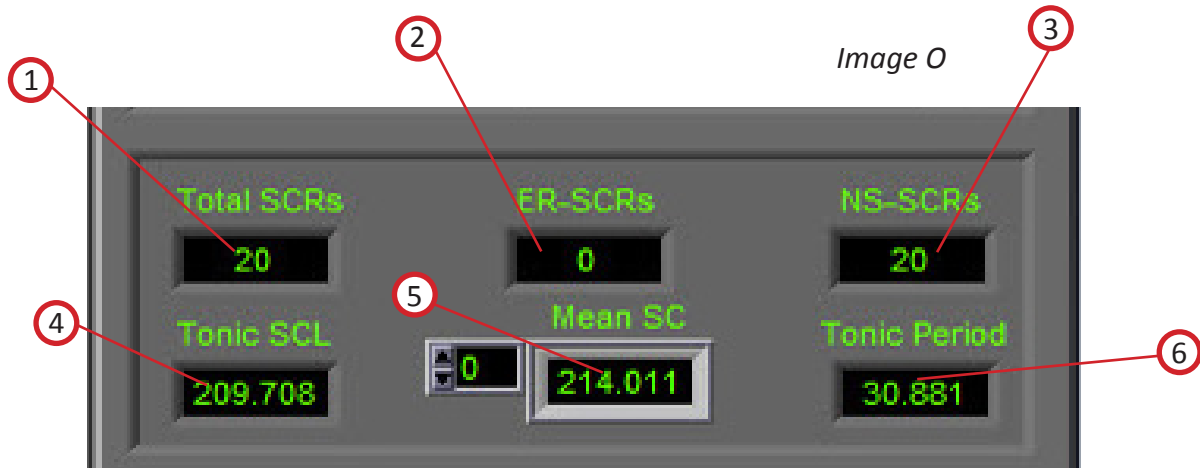
HR Time: Specifies the time of the half-recovery associated with each SCR. If there is no half-recovery associated with an SCR, this field will have a value of '-1'.

Trough SCL: Amplitude of the trough associated with each SCR.

Peak SCL: Specifies the amplitude of the peak associated with each SCR.

SCR: This field specifies the total skin conductance response associated with each SCR as derived from: **(Peak SCL) – (Trough SCL)**

Section 3



Total SCR's (1): This value represents the total number of Skin Conductance Responses found.

ER-SCR's (2): This value represents the total number of Event Related Skin Conductance Responses found. An Event Related Skin Conductance Response is a response that meets the timing criteria as specified by the ER-SCR Latency Min and ER-SCR Latency Max controls on the Setup screen. A response is event related if the difference between the event time and the trough of the response is greater than the ER-SCR Latency Min and less than or equal to the ER-SCR Latency Max.

NS-SCR's (3): This value represents the total number of non-specific Skin Conductance Responses found. A non-specific Skin Conductance Response is a response that does not meet the timing criteria as specified by the ER-SCR Latency Min and ER-SCR Latency Max controls on the Setup screen.

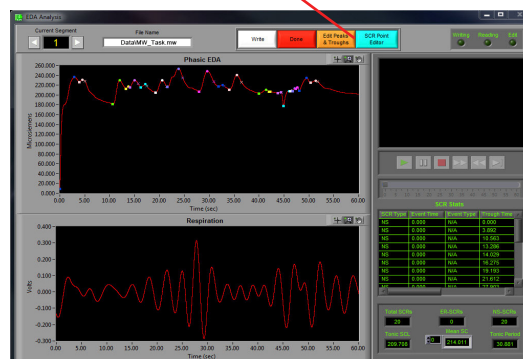
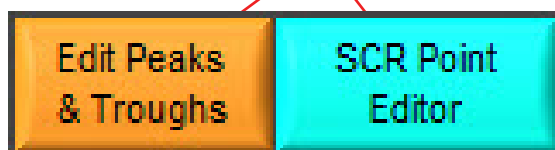
Mean SCL (4): The Mean Skin Conductance Level is a value that represents the Skin Conductance Level for the entire window minus the artifact that can be introduced by the phasic activity. This waveform is reconstructed by removing a portion of each skin conductance response that is equal to the trough time to the half-recovery time.

Mean SC (5): The Mean Skin Conductance indicator is an array of mean Skin Conductance values. The array size is dependant upon the setting of the Calculation Method and Interval Period controls on the Setup screen. If Calculation Method is set to Entire there will be one value in the array representing the mean uSiemen value of the entire window. In Interval Mode there will be a result for each period as specified by Interval Period.

Tonic Period (6): This value is the total period of the waveform after removing all phasic responses (SCRs).

Section 4

Signal Editor



Peaks and Troughs Editor:

This screen can be accessed by clicking the orange “Edit Peaks & Troughs” editor button at the top of the Analysis Screen. This will bring up the editor pop-up window.

The Peaks & Troughs Editor (*Image R*), is an easy to use, yet powerful tool allowing for the modification of the placement of peaks and troughs detected programmatically from the detection algorithm. The graphical based editor and will carry any modification that is made back to the analysis screen.

There are two waveforms visible from within the editor. Displayed in red is the EDA time series with the peaks marked in blue and troughs marked in green. Displayed in purple is the respiration signal time series

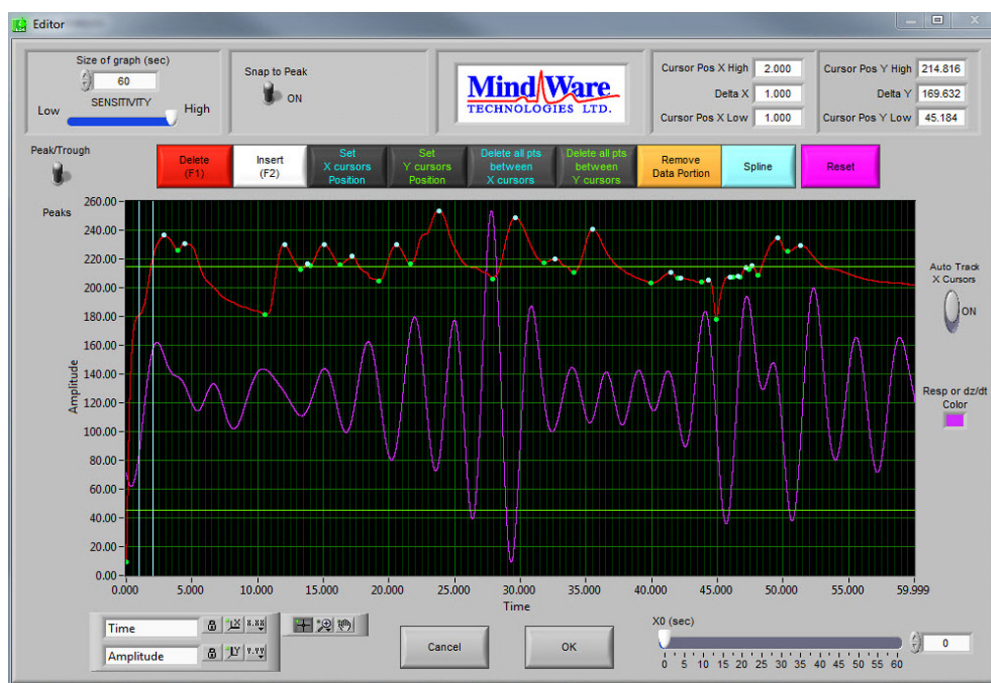
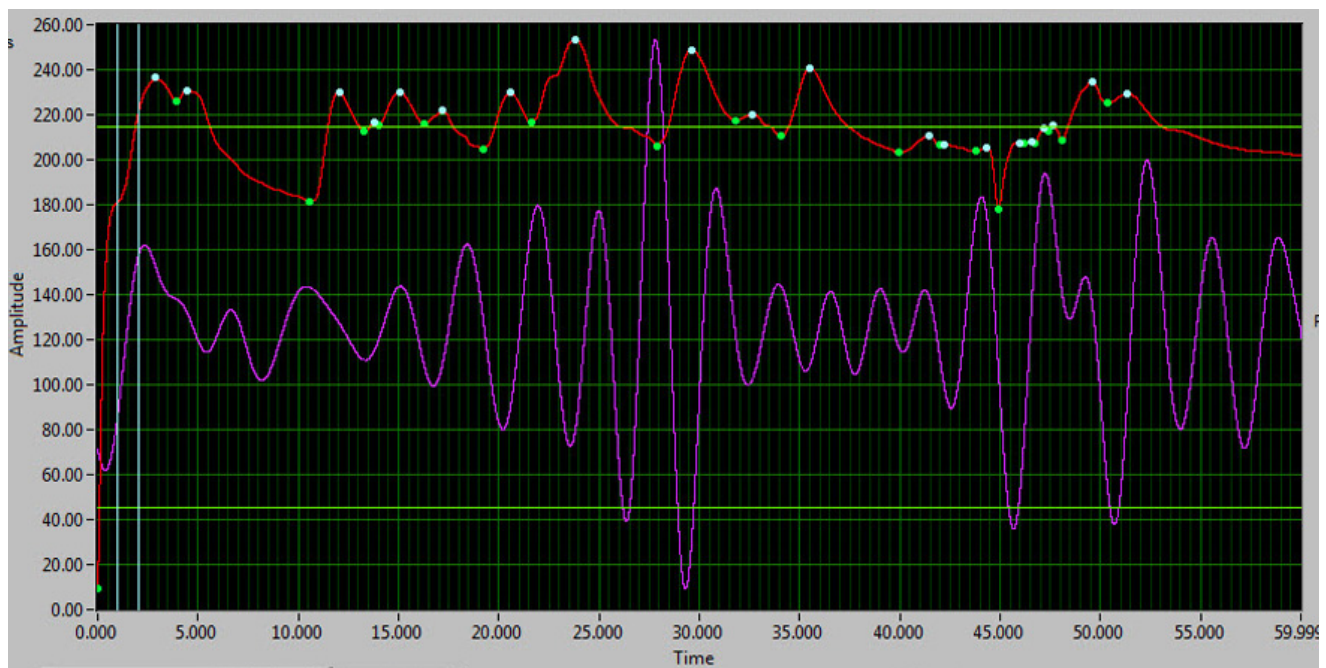


Image R

Section 4

There is also a set of green horizontal cursors and blue vertical cursors. By selecting the crosshair tool under the graph the user can move the position of these cursors and then click the Delete all Points between X Cursors or Delete all Points between Y Cursors, all peaks/troughs detected between their respective cursors will be deleted. This is especially helpful for removing an entire SCR. This will only remove the markers on the EDA waveform.

Image R2



EDA waveform graph: (Image R2): The EDA waveform is displayed in red. The blue markers denote the peaks as detected from the SCR detection algorithm. The green markers denote the troughs as detected from the SCR detection algorithm. The yellow circular markers with cross hair markers denote potential artifact detected by the error detection algorithms. The Y values are scaled in volts and the X values are in time (seconds.) The graph tools window in the bottom left has three tools for aid in editing. The tool with the cross hairs should be used for inserting and/or deleting points and takes the form of a circle that can be scaled in size to manage more or less points. The size of the circle is directly linked to the sensitivity bar and can be controlled with that or the tracking wheel on mouse. The second tool, the magnifying glass, can be used to zoom in on the graph. The third tool, the hand, is used to scroll through the entire data set. The control in the bottom left corner can be used to zoom out the graph after zooming in by clicking on the X or Y button to zoom the graph back to its original position. This graph also contains cursors used to delete multiple points simultaneously. These cursors can be dragged freely to a desired location.

Section 4

Settings (Image S):



Image S

Size of Graph (seconds) (1): The Size of Graph control determines how much of the waveform to display at once. This value can be changed to fit less data onto the screen at once much like a zoom window.

Snap to Peak Control and Sensitivity Control (2): The snap to peak switch when in the “On” position will enable the snap to peak algorithm for point insertion. When the snap to peak switch is in the “OFF” position, it disables the snap to peak algorithm and allows for manual insertion of a point at the point clicked upon within the graph indicator. To successfully insert a point using the snap to peak setting, the user must click the mouse that takes the form of a circle that can be scaled in size to manage more or less points. The size of the circle is directly linked to the sensitivity bar and can be controlled with that or the tracking wheel on mouse. When the snap to peak control is on and a point is successfully inserted, the point has been inserted indicator will turn green.

Note: Having the sensitivity to high or too low will result in too many points being deleted or not enough depending on the signal quality (noise, etc) and the rate of signal being edited.

Cursor Lines Information (4): This section gives the location of the x and y line cursors and the distance between them in numeric values.

Section 4

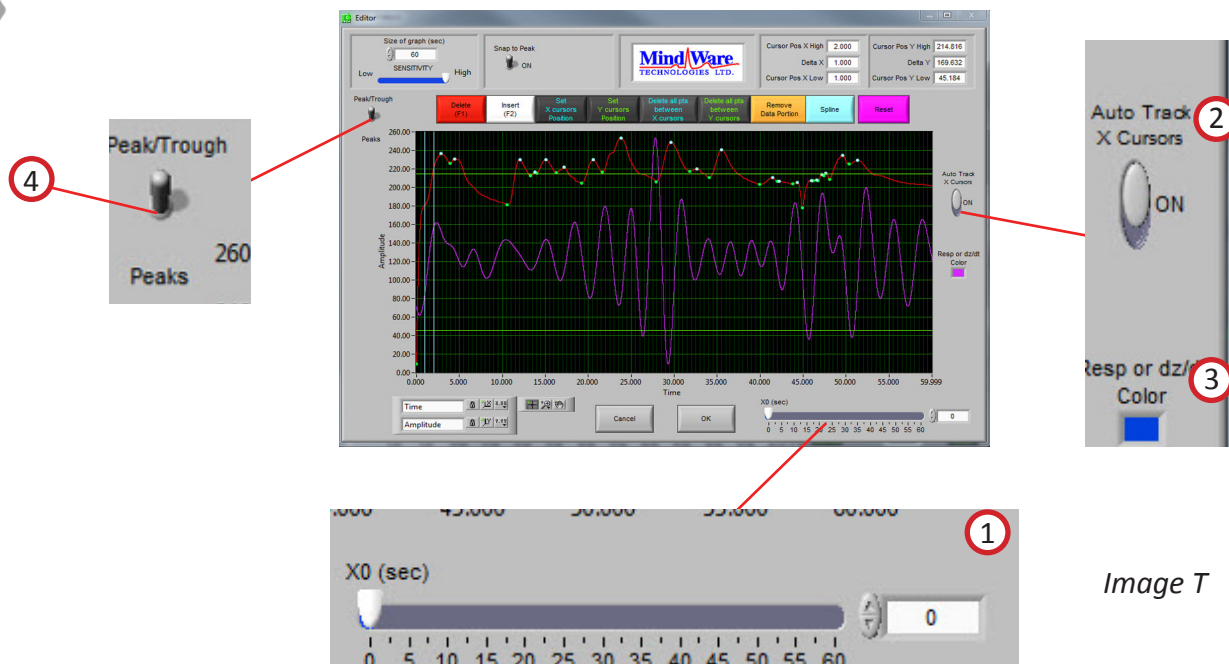


Image T

Settings Continued (*Image T*):

X0 (seconds) (1): The X0 control determines where to start the graph in time. The user can slide this control to move their way through the segment in the edit screen.

Auto-Track Cursors (2): When activated, the cursors will retain their position on the screen as the data is scrolled through. When off, the cursors keep their position in the data and can leave the screen if scrolled past.

Resp or dZ/dt Color (3): This color box shows the current color of the respiration or dZ/dt plot. Clicking this control allows the user to change the color of this plot.

Peak/Trough (4): This control specifies whether the action being taken affects the peaks or troughs of the EDA waveform.

Section 4

Tools (*Image U*):



Delete (F1) (1): This control latches when pressed until pressed again. If the points are within the range defined by the sensitivity control and the mouse click they will be deleted. Note: Having the sensitivity too high or too low will result in too many points being deleted or not enough depending on the signal quality (noise, etc) and the rate of signal being edited.

Insert (F2) (2): The tool for inserting points takes the form of a circle that can be scaled in size to manage more or less points. The size of the circle is directly linked to the sensitivity bar and can be controlled with that or the tracking wheel on mouse. If the points are within the range then the mouse click they will be inserted at the point of the mouse click or at the peak/trough defined by the snap to peak window control above as long as snap to peak is on.

Set X Cursor Position (3): The Set X Cursor Position brings up a window through which the user can set the high and low position of the X cursors by changing their numerical value. The Cursor Pos X Low and Cursor Pos X High show these settings.

Set Y Cursor Position (4): The Set Y Cursor Position brings up a window through which the user can set the high and low position of the Y cursors by changing their numerical value. The Cursor Pos Y Low and Cursor Pos Y High show these settings.

Delete All Points Between X Cursors (5): All points within the boundary defined by the vertical blue cursors will be removed.

Delete All Points Between Y Cursors (6): All points within the boundary defined by the horizontal green cursors will be removed.

Remove Data Portion (7): This control will remove all data within the boundary defined by the cursors.

Spline (8): This control connects the two data points specified by the X Cursors with a line, or splines the data between the two cursors.

Reset (9): This control resets the peaks and troughs to the original state when the editor was first entered.

Section 4

Customer Support:

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Tools Continued (*Image U2*):

Crosshair Tool (1): Allows for point and cursor interaction within the plotted data. Default tool for Insert and Delete commands

Hand Tool (2): Allows user to move plotted data by clicking and dragging to desired position.

Zoom Tool (3): Can be used to visually zoom in and out of plotted data by selecting desired zoom method.

Zoom Methods: The zoom tool has multiple methods of interaction.

Selection Zoom (4): Zooms into area by clicking and dragging selection box over desired position.

Zoom X (5): Zooms along the x-axis.

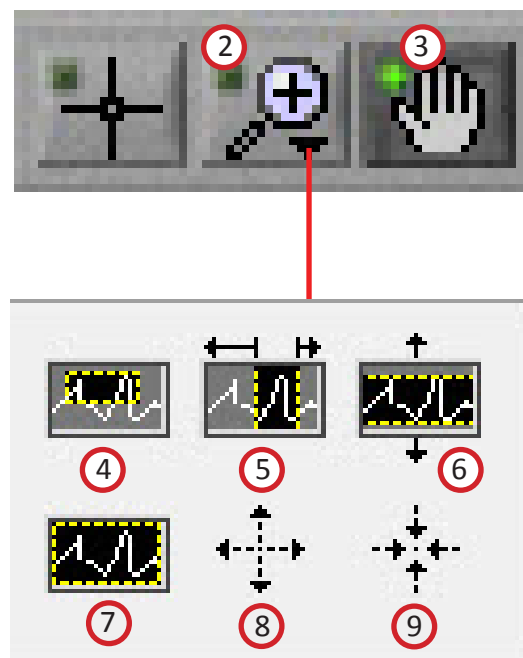
Zoom Y (6): Zooms along the y-axis.

Reset: (7): Resets view to default.

Zoom In (8): Zooms in by clicking

Zoom Out (9): Zooms out by clicking

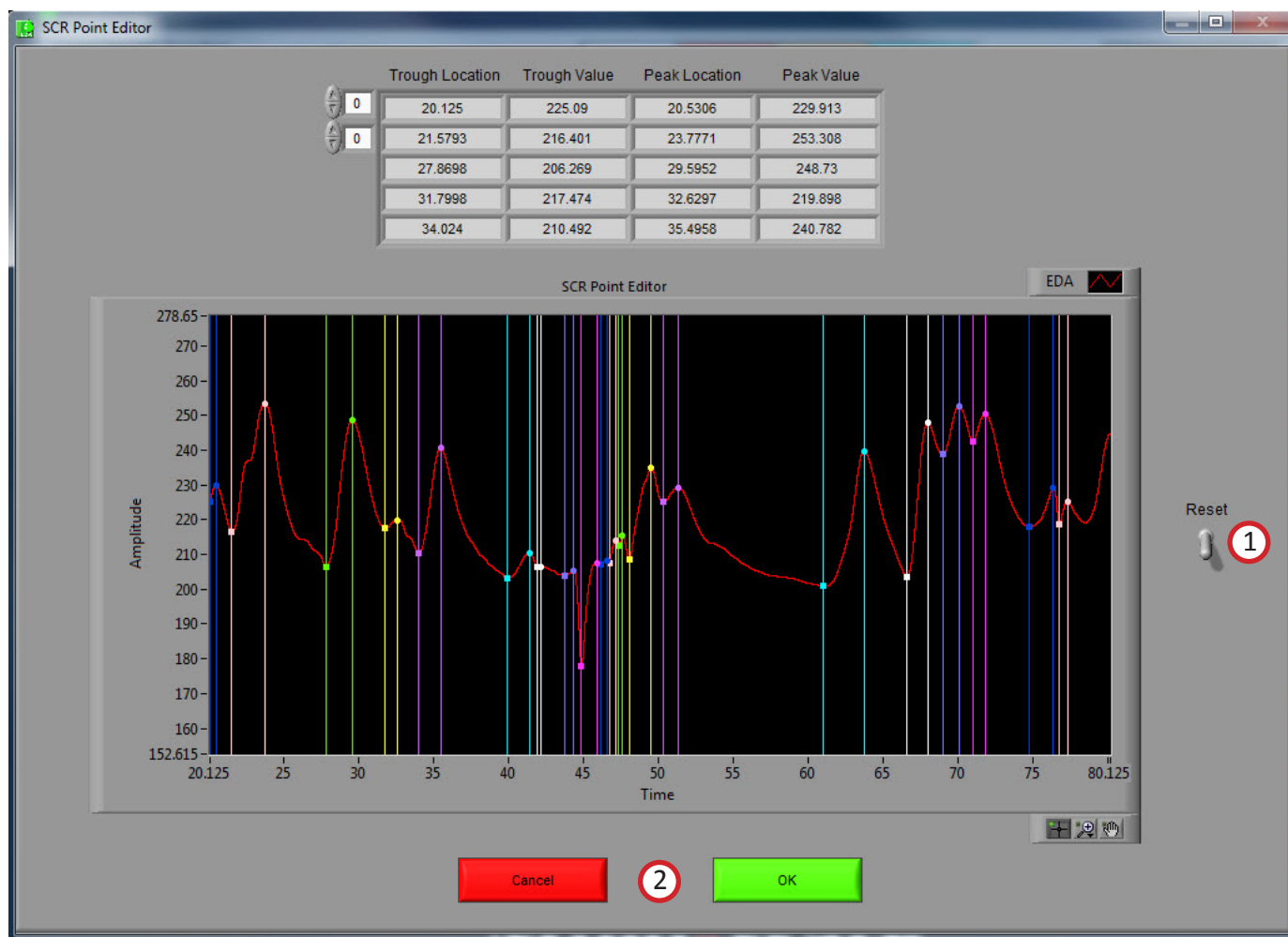
Image U2



Section 4

SCR Point Editor:

This screen can be accessed by clicking the green “SCR Point Editor” button at the top of the Analysis Screen. This will bring up the editor pop-up window.



The SCR Point Editor allows for the correction of the peak and trough components of each SCR found in the current data segment. Each SCR has a particular color assigned to it, and both the trough and peak associated with the SCR are labeled with a cursor. These cursors can be dragged freely to any new location to specify a new peak or trough for any SCR. The table above the plot shows the current location and amplitude of each trough and peak that can be edited.

Reset (1): This control resets the locations of each trough and peak as it was when the editor was opened.

OK and Cancel (2): The cancel button will return the user to the analysis window without saving any changes made to the SCRs. The OK button will save changes made and return to the analysis screen, where these changes will be reflected in the Phasic EDA plot.

Section 5

Output File

When the Write button is pressed on the Analysis screen, the output file will be written. The file contains all of the statistics from the application as well as the description of the setup. Data files are in Excel format and appear as follows.

	A	B	C	D
1	Version	3.1.0		
2	Date	5/8/2014		
3	Time	1:18 PM		
4	File Name	C:\Data\MW_Task.mw		
5	Event File Name	N/A		
6	Analysis Mode	Time		
7	Event Filter	N/A		
8	Event Identifier	N/A		
9	Start Time	0		
10	Segment Time	60		
11	End Time	577.9		
12	Event Mode	N/A		
13	Pre-Event Time	N/A		
14	Post-Event Time	N/A		
15	Event to Use	N/A		
16	All Instances	N/A		
17	Test Event	N/A		

Section 5

An Excel spreadsheet file will be created containing seven worksheets:

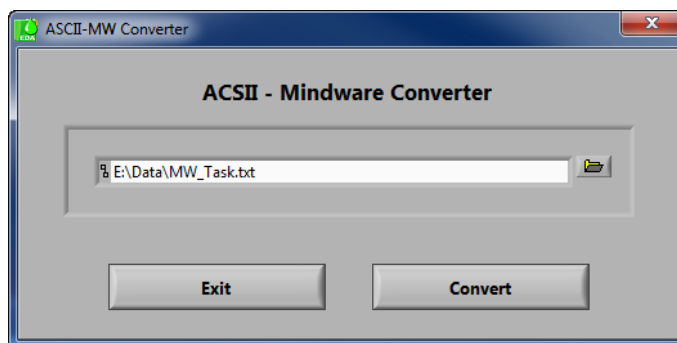
EDA Stats: This worksheet (shown above) contains all setup information as well as the calculated statistics from the specified segment of data.

SRC Stats: This worksheet contains the SCR stats from the SCR Stats array from the specified segment of data.

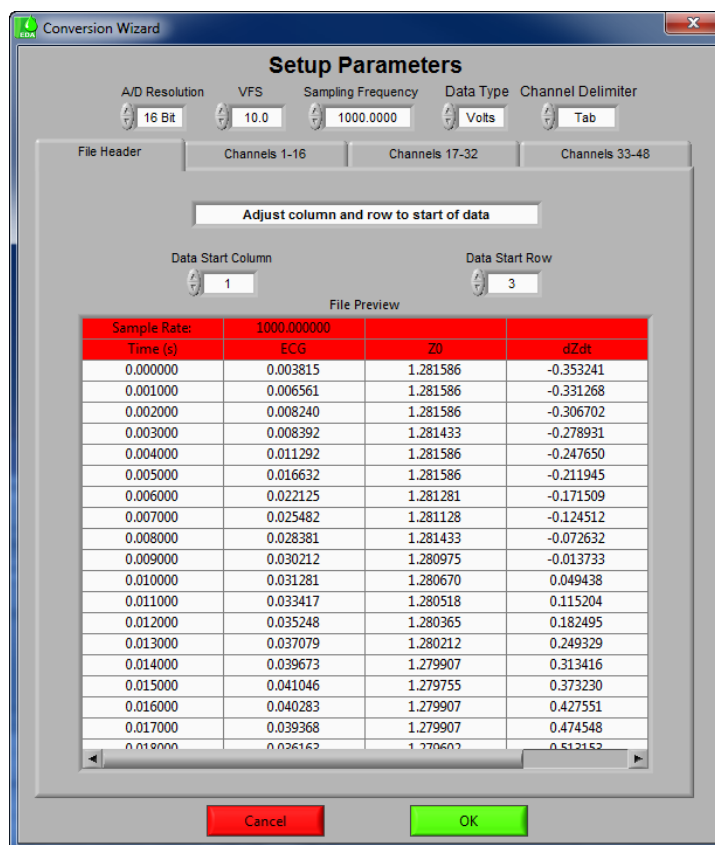
When in **interval mode** an additional worksheet and text file will be created titled Interval Stats, which contains the mean SC from each of the intervals in the current segment.

Appendix A

Appendix A: ASCII-MW Converter



The ASCII-MW Converter allows the conversion of any text file containing data in some character-delimited columns to the .mw format so that it may be used in any analysis application. To begin conversion, select a text file containing data by using the browse button on the file path control and pressing Convert. To exit the converter and return to the setup screen, press Exit.



The next screen in the conversion process is the Text File Conversion Wizard. From this screen, details about the data in the text file must be entered in order to properly scale and display the data in the analysis applications. It is extremely important that these values are identical to the way the data was acquired to ensure the correct conversion.

A/D Resolution: This control is the resolution of the A/d converters in the hardware used to acquire the data in the file.

VF: This control is the volts full scale of the hardware used to acquire the data in the file.

Sampling Frequency (Hz): This control is the sampling frequency at which the data in the file was collected.

Data Type: This control specifies whether the data in the file is in volts or A/d counts.

Channel Delimiter: This control specifies the character which is used to separate data channels in the file.

Below these settings is the submenu control. The following submenus are available:

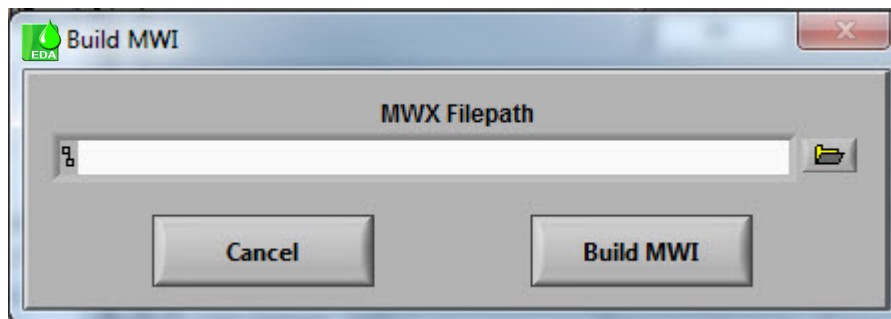
File Header: This submenu contains a preview of the beginning of the selected text file. Using the controls **Data Start Column** and **Data Start Row**, select where the data actually begins in the file past any file header information. Rows and columns which will not be included in conversion appear in red.

Channels 1-16: This submenu contains the channels found in the text file and allows for them to be selected/deselected for conversion.

Appendix B & C

Appendix B: Build MWI

The Build MWI tool created an MWI file for a specified MWX file. When an MWX file is created without an MWI file (such as in local mode of Mobile Recording), an MWI file will need to be created before that file can be analyzed.



Appendix C: Software Update

MindWare Electrodermal Activity will automatically check for new versions of the application on startup. To manually check for updates you can go to Help>>Check for Updates.

It is recommended to keep this feature enabled to ensure the latest version of the application is always being used. However, automatic checking for updates can be disabled on the update notification window.

