Other sensor colors indicate:

Black: No signal (Not Acceptable)

Red: Very poor signal (Not Acceptable)

Orange: Poor signal

Yellow: Fair signal

All Green: Ideal signal

Green + Some Yellows: Acceptable

Green + Black and/or Orange/Red: Not Acceptable

The setup procedure used to achieve good contact quality is outlined below. Only after the EPOC Headset sensor contact quality has been maximised, should you move on to other EPOC Control Panel tabs.

3.0   Achieving Good Signal Quality

STEP 1: Before putting on the EPOC Headset, ensure that each of the 16 electrode sockets are fitted with a sensor unit with a moist felt pad. If the pads are not already moist, wet them with saline solution before inserting into the headset using the procedure outlined in Section 2.2, above.

STEP 2: Switch on the EPOC Headset, and verify that the built-in battery is charged and is providing power by looking for the blue LED located near the power switch at the back of the headset. If the headset battery needs charging, set the power switch to the off position, and plug the headset into the Emotiv battery charger using the mini-USB cable provided with the EPOC Headset, or alternatively through a spare USB socket on your PC using a USB-MiniB cable. Allow the EPOC Headset battery to charge for at least 15 minutes before trying again. A fully discharged headset will take 4-5 hours to reach full charge.

STEP 3: Verify that the *Wireless Signal* reception is reported as "Good" by looking at the *Engine Status* area in the EmoEngine Status Pane (described in Section 2.6). If the *Wireless Signal* status is reported as "Bad" or "No Signal", then make sure that the Emotiv Wireless USB Receiver is inserted into a USB port on your computer and that the bright LED and dim flickering data transfer LED on the top half of the receiver are visible. If the LED is blinking slowly or is not illuminated, then remove the receiver from the computer, reinsert it, and try again. Remove any metallic or dense physical obstructions located near the receiver or the EPOC Headset, and move away from any powerful sources of electromagnetic interference, such as microwave ovens, large motors, or high-powered radio transmitters. You may also attach the USB Transceiver to the end of a USB extension cable in order to position the Transceiver prominently in the space, away from potential sources of interference such as monitors and wireless routers.

STEP 4: Put on the EPOC Headset by gently pulling apart the headband and lowering the sensor arms onto your head from the top down, near the rear of the skull. Next, slide the headset forward until the sensors closest to the headset pivot points are located directly above your ears and as close to your hairline as possible. Adjust the fit so that the rectangular compartments at the front ends of the headband sit comfortably just above and behind your ears. Tilt the headset so that the two lowest, front-most sensors are symmetric on your forehead and positioned about 2 to 2.5 inches above your eyebrows. Finally, check that all sensors are touching your head and, if not,

then fine tune the headset fit by gently sliding the headset in small increments until an ideal fit has been achieved.

STEP 5: Starting with the two sensors just above and behind your ears (these are reference sensors for which good contact with your scalp is essential), adjust the sensors so they make proper contact with your scalp (i.e. show green on the contact quality display). If the indicators are:

Black: Check that the sensor has a felt pad fitted. Check that the felt pad is pressing firmly against your scalp. Then try re-moistening the felt pad. If problems persist, this may indicate a problem with the EPOC Headset.

Yellow, Orange, or Red: The sensor has not established a good conductive path with your scalp. Check that the felt pad is making comfortable, yet firm, contact with your scalp. Try shifting the headset slightly back and forth on your head, or press gently on the troublesome sensor to improve contact. If the contact is adequate, ensure that the felt pad is moist. If the sensor's indicator color becomes lighter, the signal quality is improving. If the sensor's indicator color is getting darker the signal quality is deteriorating. If problems still persist, try parting the hair in the vicinity of the electrode so the felt pad touches your scalp.

See the TROUBLESHOOTING GUIDE at the end of this manual for more details on how to deal with poor contact.

STEP 6: Repeat Step 5 for each of the remaining sensors until all of the sensors have adequate contact quality (i.e. are predominantly showing green).

If at any time the reference sensors (located just above and behind your ears) no longer have a good connection (i.e. they show RED, and most or all of the other sensors turn BLACK), immediately restore these sensors to green before proceeding further. Try the alternative reference locations behind the ears if you continue to have difficulty with the primary locations (Section 2.5).

3.1   Expressiv™ Suite

The Expressive Suite details the facial expressions and non-verbal communication capabilities of the EPOC Headset.   No longer do you need to push a button or type in emoticons into a chat dialog box during game-play. Now, if you want to show facial expressions on your avatar, you need only perform them while wearing the EPOC headset and you can display these expressions on the face of your avatar.
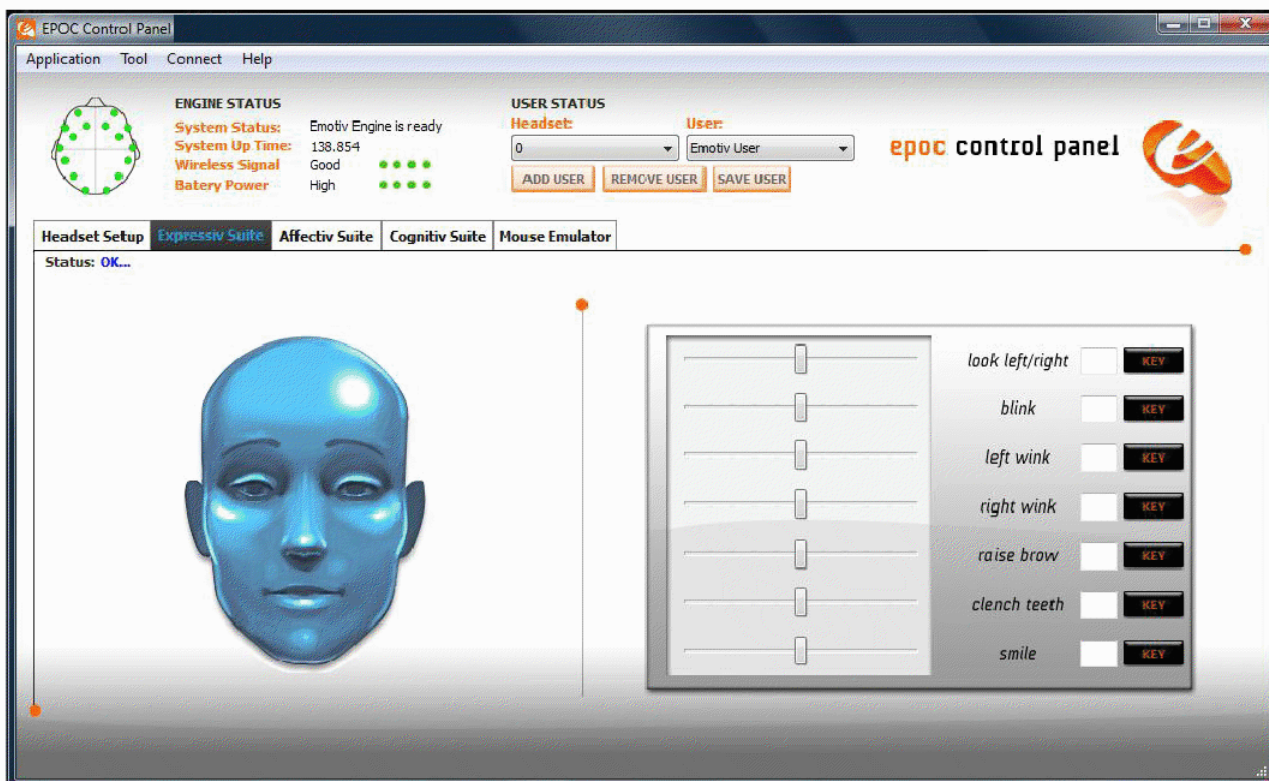

Figure 14 Expressiv Suite

3.1.1   Understanding the Expressiv Suite Panel Display

On the left-hand side of the *Expressiv Suite* panel is a simple avatar. The avatar will mimic your facial expressions, in camera view (i.e. not mirrored). The facial expressions which are displayed include horizontal eye movements to the left and right, normal eye blinks, left and right sided winks, clenching the teeth and smiling.

On the right-hand side of the panel is the *Sensitivity* panel.

This panel is explained further in the following section.

3.1.2   Sensitivity Adjustment Panel

The Control Panel offers sensitivity adjustments for the Expressiv Suite detections. This is controlled through sliders to the right of avatar.

For each facial expression, check the performance of the detection. If you feel that the Expressiv detection is not responding readily to a particular expression, then increase the sensitivity for that expression. If you feel that it is too easy to trigger a particular expression, or you are seeing "false positive" expressions, then decrease the sensitivity for that expression. Sensitivity can be increased or decreased by moving the sensitivity slider to the right or left, respectively.
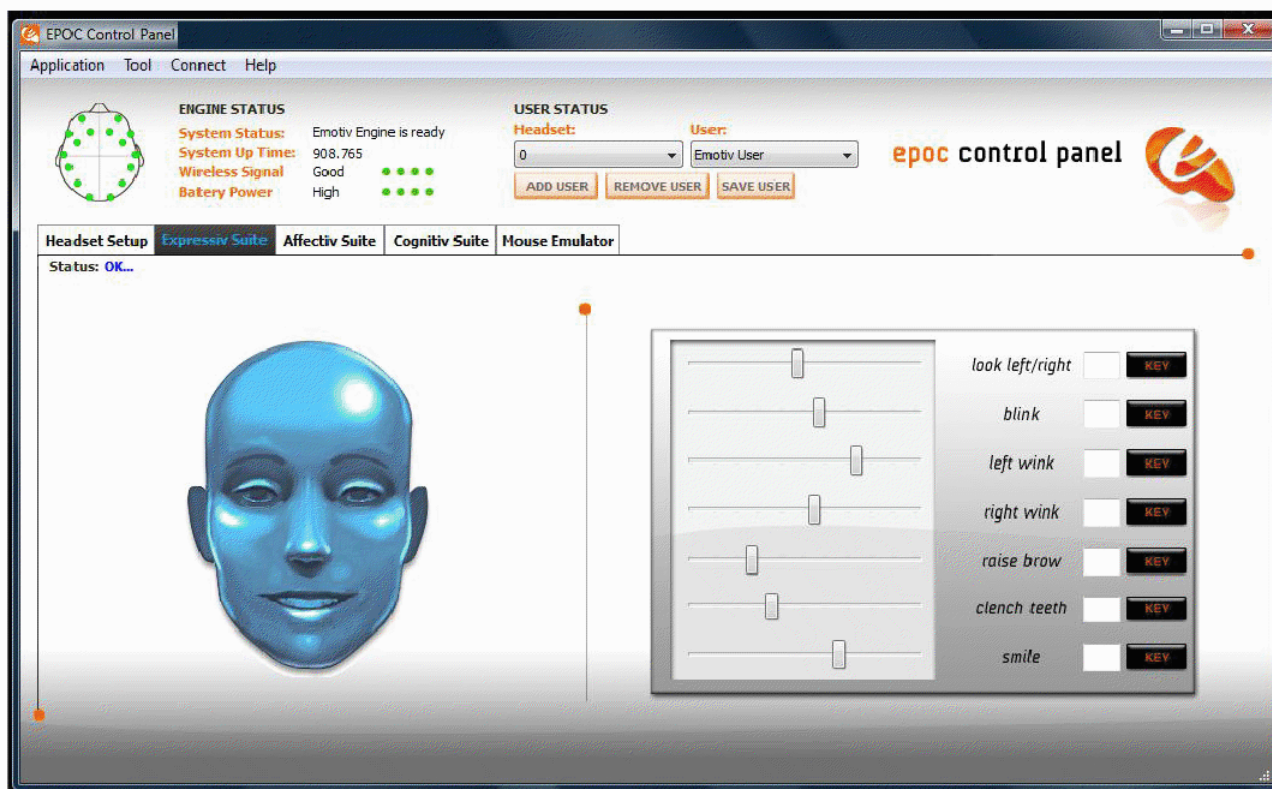

Figure 15 Expressiv Suite Sensitivity Adjustment Panel

3.1.3   EmoKey

EmoKey links the Emotiv technology to your applications by easily converting detected events into any combination of keystrokes. EmoKey is a nonintrusive, lightweight, background process that runs behind your existing games or applications. EmoKey lets you create mappings that define how detections are converted to keystroke combinations. Your mappings can then be saved and shared so you can use mappings that your friends have created for your favorite games and software. EmoKey mappings can be as simple as linking the Expressiv smile detection to text characters such as ":)", so that chat applications instantly know when you smile.

Configuring EmoKey

To configure a facial expression to EmoKey, select the expression you wish to link and click on the *Key* button next to the Facial Expression description. This will bring up a Configuration Dialogue box as shown in Figure 7. Type into the text box, the specific keystroke(s) you wish to send. You can also make the facial expression send a continuous string of keys by checking the *Hold the key* box.

There are also options to further configure the *Key hold time* and *Key trigger delay time*. Once you are satisfied with the settings, click the *Apply* button. Note that for Cognitiv actions and Expressiv Raise Eyebrows, Clench Teeth and Smile detections, you should use the "is greater than" method and the Limit should be set, at a minimum, to 0.10. The default setting at "is equal to" 0.00 will trigger the events when no action is occurring.
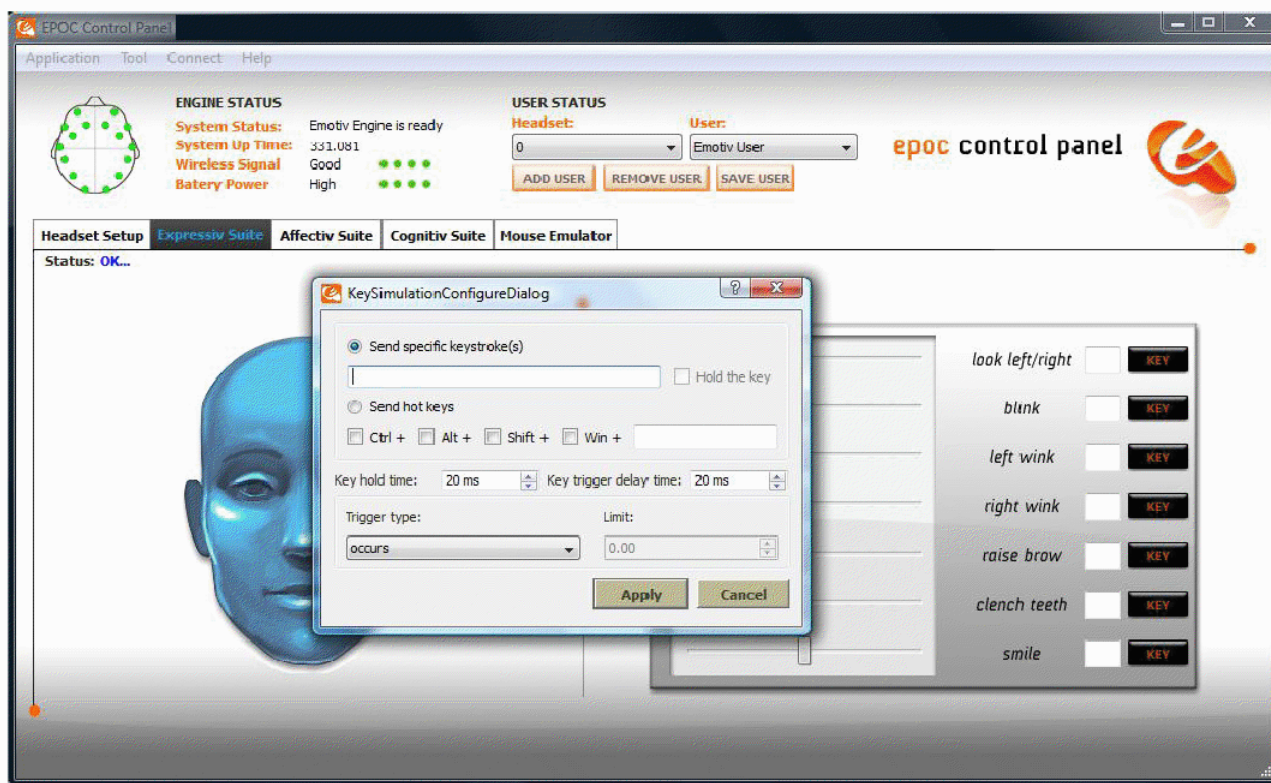

Figure 16 Emokey Configuration Dialogue Box

Once EmoKey is activated, the keystroke(s) allocated to the facial expression will be marked in the corresponding box. An orange highlight will flash in the box to the right of the facial expression description that is being triggered. Only actions that have keystrokes allocated will be sent to an application window that is active. This is shown in Figure 8, where a smile triggers the keystroke ":)".
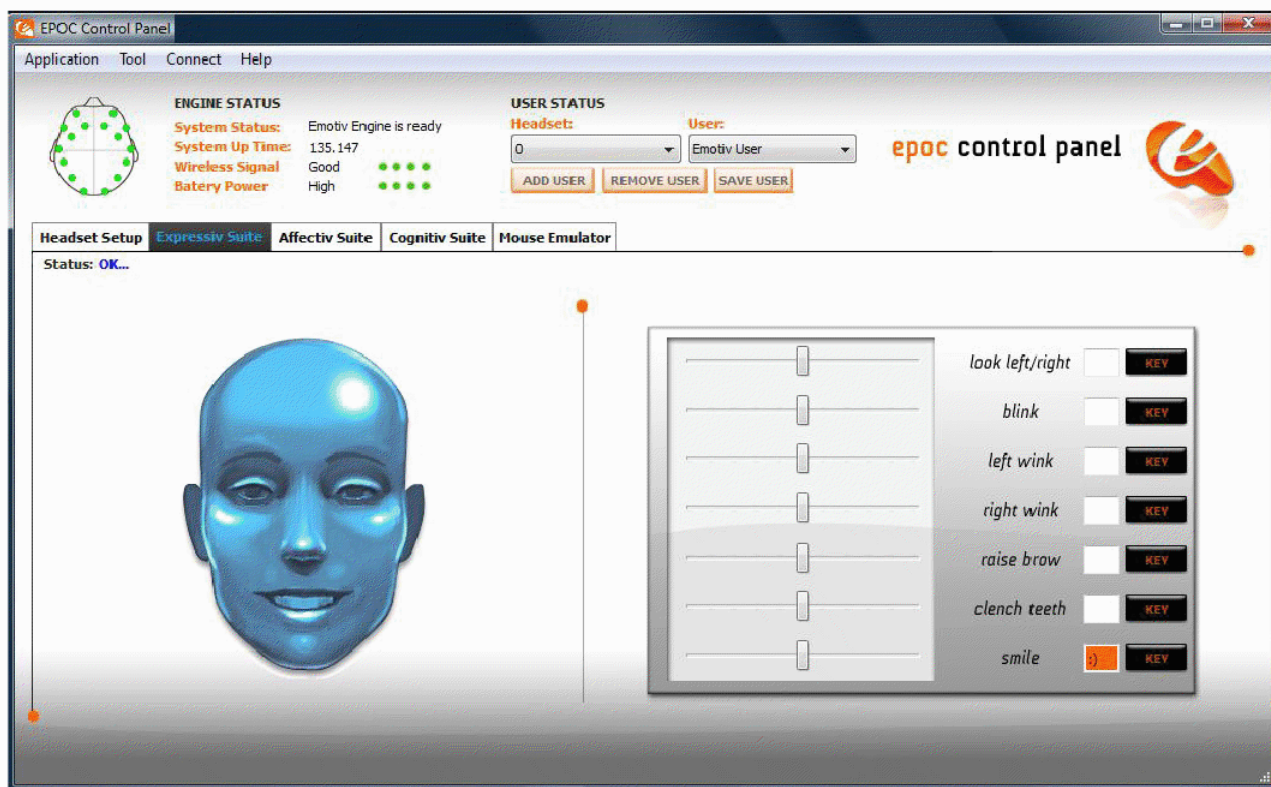

Figure 17 EmoKey - Smile detection linked to ":)"

You can manage and save Emokey mappings using the EmoKey menu at the top of the Control Panel Window. Mappings can be loaded or saved and you can also temporarily suspend EmoKey activity using the Activate tick selector in the EmoKey menu.

3.2 Affectiv™ Suite

The Affectiv Suite of functions measures and displays a wide range of subjective emotional responses. Levels of interest, excitement, and engagement that you experience in a cyber environment are translated into graphical measurements on the control panel dials, and in some cases, into dynamically changing environments within games you are playing.
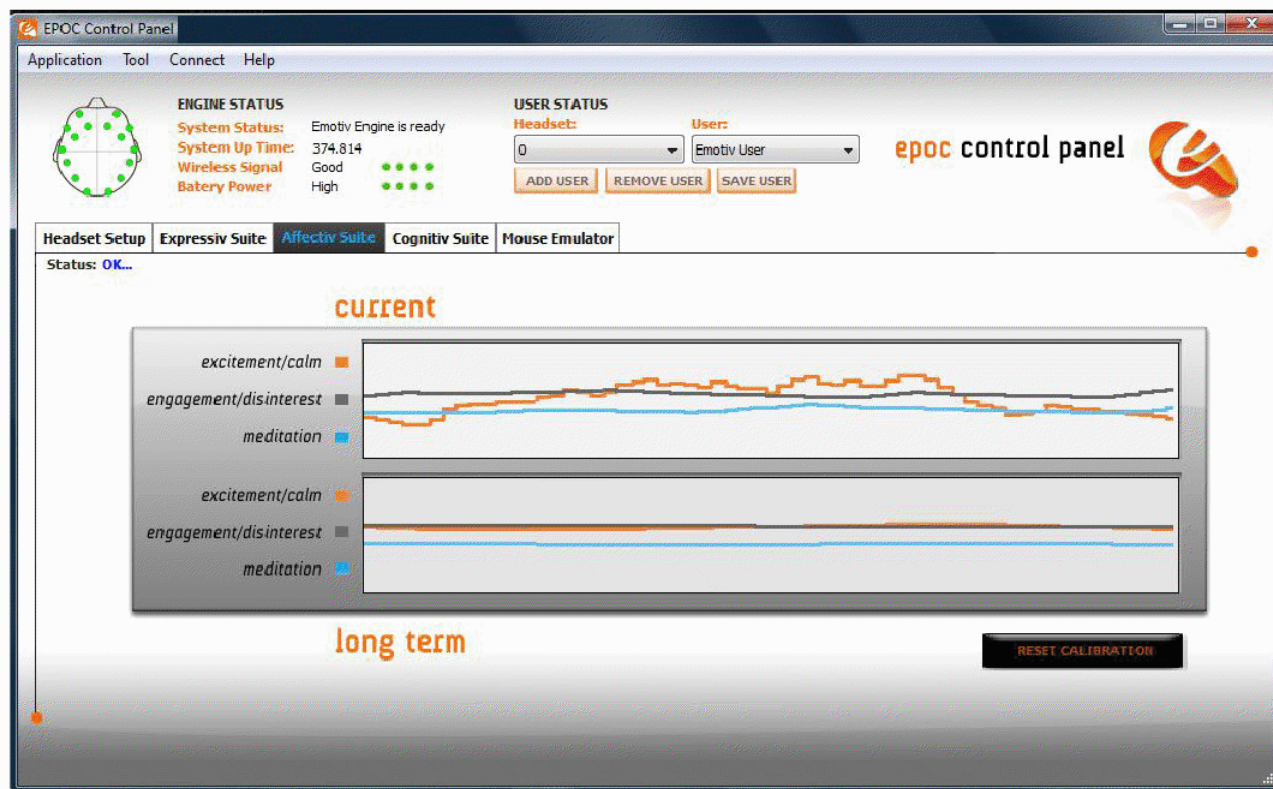

Figure 18 Affectiv Suite Panel

3.2.1   Affectiv Suite Introduction

The Affectiv Suite reports real time changes in the subjective emotions experienced by the user. EPOC Control Panel currently displays three short-term and three long-term Affectiv detections: Meditation, Engagement and Excitement. Related emotions:are alertness, vigilance, concentration, stimulation, interest.

Examples of engaging video game events that result in a peak in the detection are difficult tasks requiring concentration, discovering something new, and entering a new area. Deaths in a game often result in bell-shaped transient responses. Shooting or sniping targets also produce similar transient responses. Writing something on paper or typing typically increase the engagement score, while closing the eyes almost always rapidly decreases the score.

3.2.2   Understanding the Affectiv Panel Display

The *Affectiv Suite* panel contains two graph panes displaying the three Affectiv detections instantaneous and long-term average time scales. The top chart is configured to plot 30 seconds of data for the *Engagement, Meditation* and *Instantaneous Excitement* detections. The bottom chart defaults to display 5 minutes worth of data for the *Long-Term Engagement, Meditation and Excitement* detections. The values that are plotted on the graphs are the output scores returned by the Affectiv detections.

3.2.3   Affectiv Suite Detection Details

Scoring behavior: In general, the greater the increase in physiological arousal the greater the output score for the detection.

Instantaneous Excitement is experienced as an awareness or feeling of physiological arousal with a positive value. Excitement is characterized by activation in the sympathetic nervous system which results in a range of physiological responses including pupil dilation, eye widening, sweat gland stimulation, heart rate and muscle tension increases, blood diversion, and digestive inhibition. The Instantaneous Excitement detection is tuned to provide output scores that more accurately reflect short-term changes in excitement over time periods as short as several seconds.

Related emotions: titillation, nervousness, agitation

Long-Term Excitement is experienced and defined in the same way as Instantaneous Excitement, but the detection is designed and tuned to be more accurate when measuring changes in excitement over longer time periods, typically measured in minutes.

Engagement is experienced as alertness and the conscious direction of attention towards task-relevant stimuli. It is characterized by increased physiological arousal and beta waves (a well-known type of EEG waveform) along with attenuated alpha waves (another type of EEG waveform). The opposite pole of this detection is referred to as "Boredom" in EPOC Control Panel and the Emotiv API; however, please note that this does not always correspond to a subjective emotional experience that all users describe as boredom.

Related emotions: alertness, vigilance, concentration, stimulation, interest Scoring behavior: The greater the attention, focus and cognitive workload, the greater the output score reported by the detection. Examples of engaging video game events that result in a peak in the detection are difficult tasks requiring concentration, discovering something new, and entering a new area. Deaths in a game often result in bell-shaped transient responses. Shooting or sniping targets also produce similar transient responses. Writing something on paper or typing typically increase the engagement score, while closing the eyes almost always rapidly decreases the score.

3.3   Cognitiv™ Suite

The *Cognitiv Suite* panel uses a virtual 3D cube to display an animated representation of the Cognitiv detection output.

3.3.1   Cognitiv Suite Introduction

The Cognitiv detection suite evaluates a user's real time brainwave activity to discern the user's conscious intent to perform distinct physical actions on a real or virtual object. The detection is designed to work with up to 13 different actions: 6 directional movements (push, pull, left, right, up and down) and 6 rotations (clockwise, counter-clockwise, left, right, forward and backward) plus one additional action that exists only in the realm of the user's imagination: disappear.

Cognitiv allows the user to choose up to 4 actions that can be recognized at any given time. The detection reports a single action or neutral (i.e. no action) at a time, along with an action power which represents the detection's certainty that the user has entered the cognitive state associated with that action.

Increasing the number of concurrent actions increases the difficulty in maintaining conscious control over the Cognitiv detection results. Almost all new users readily gain control over a single action quite quickly. Learning to control multiple actions typically requires practice and becomes progressively harder as additional actions are added. Although EPOC Control Panel allows a user to select up to 4 actions at a time, it is important that each user masters the use of the Cognitiv detection one action at a time, only increasing the number of concurrent actions after he or she has first gained confidence and accuracy with a lower number of actions.
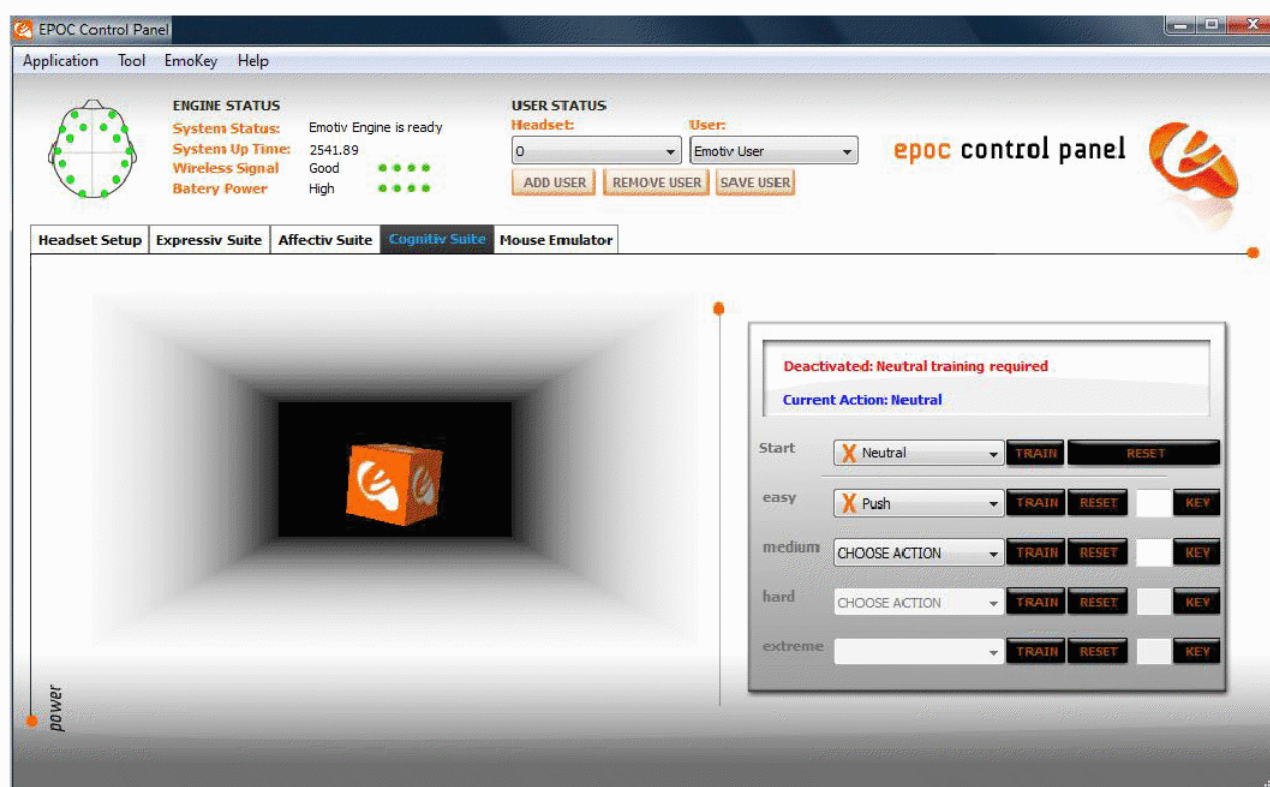

Figure 19 Cognitiv Suite Panel

3.3.2   Understanding the Cognitiv Panel Display

The *Cognitiv Suite* panel uses a virtual 3D cube to display an animated representation of the Cognitiv detection output. This 3D cube is also used to assist the user in visualizing the intended action during the training process. The *Power* gauge to the left of the 3D display is an indicator of the "action power", or relative certainty that the user is consciously visualizing the current action.

This information to the right displays the current state of the Cognitiv detection and allows the user to define the current set of actions. In order to enable the Cognitiv detection, each chosen action, plus the Neutral action must first be trained. For more information about the training process please refer to Section 3.3.3 below.

A green checkmark is used to indicate that the corresponding action has been trained; an orange X indicates a lack of training data. Remember, in order for the Cognitiv detection to be activated, all actions, plus Neutral (the user's background mental state) must be trained.

Use the drop down selection menu to modify the number and type of enabled actions.

3.3.3   Cognitiv Training

The Cognitiv training process enables the EmoEngine to analyze your brainwaves and develop a personalized signature which corresponds to each particular action, as well as the background state, or "neutral". As the EmoEngine learns and refines the signatures for each of the actions, as well as neutral, detections become more precise and easier to perform.
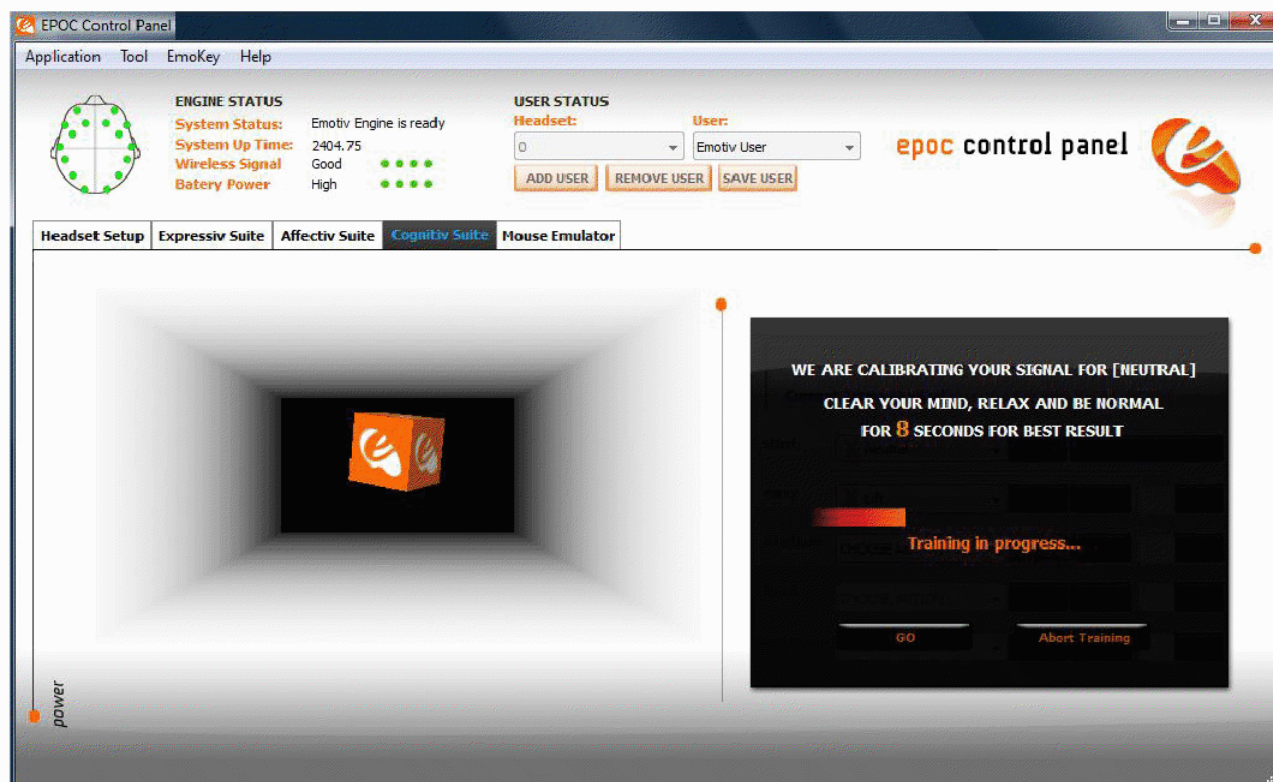

Figure 20 Cognitiv Neutral training in action

Pressing the *TRAIN* button next to the drop down menu activates the user interface controls that support the Cognitiv training process. The training process consists of three steps:

First, train a neutral state. Neutral training must be completed first before any actions can be trained and activated. To train neutral, there is nothing in particular that you need to do. Simply relax, act natural and clear your mind. Press the *TRAIN* button to bring up the training screen and press *GO* when you are ready. A progress bar will appear as your brainwaves are observed (*Figure 11*). Once training is complete, you will be asked to accept or reject the training session by pressing *YES* or *NO* (*Figure 12*). Once you accept, you will be automatically returned to the Cognitiv Panel Display.
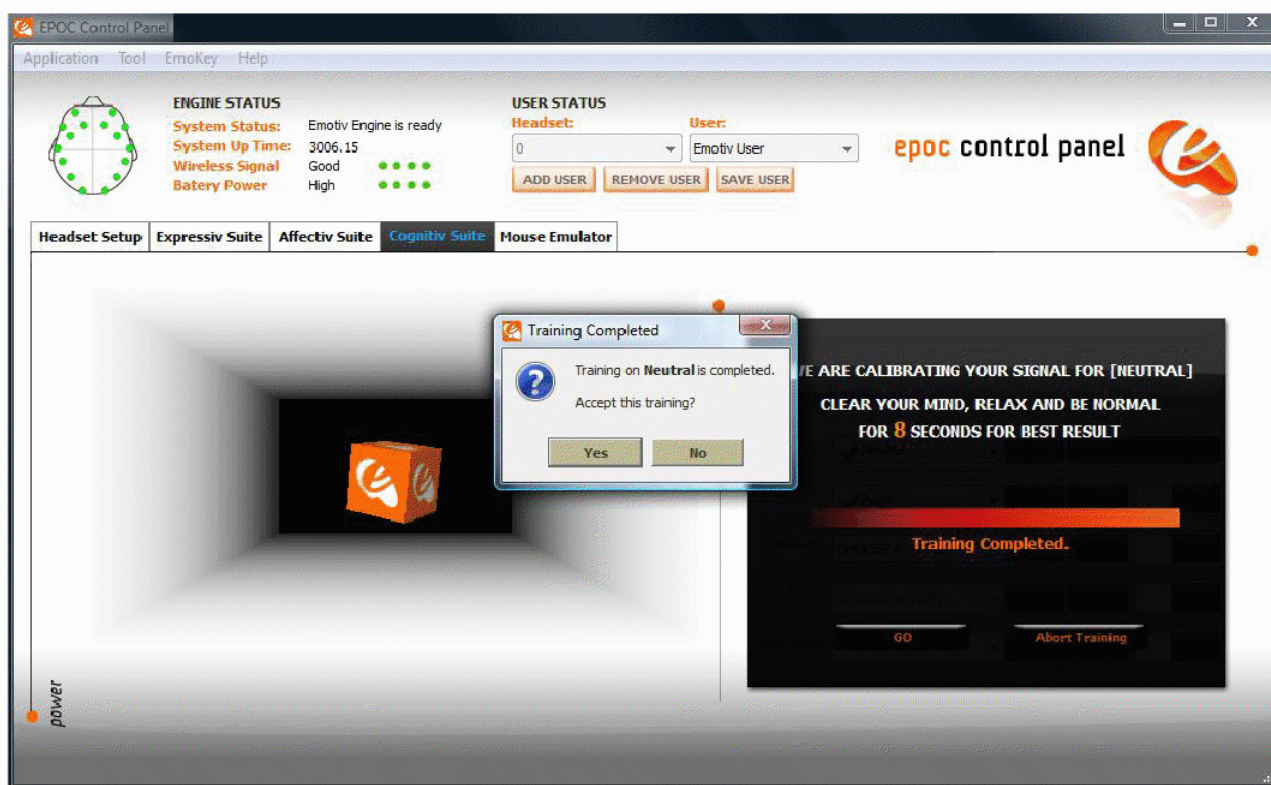

Figure 21 Accepting a training session

When you are ready to begin imagining or visualizing an action you wish to train, select the action from the dropdown list. Actions that have already been trained are paired with a green checkmark; actions with no training data are paired with an orange X.

During the training process it is very important to maintain your mental focus for the duration of the training period (currently 8 seconds). Physical gestures, such as pushing an imaginary object with one hand, may be used to heighten your focus on the intended action, but are not required. You should also refrain from making substantial head movements or dramatic facial expressions during the training period, as these actions can interfere with the recorded EEG signal.

Initially, the cube on screen will not move, as the system has not yet acquired the training data necessary to construct a personalized signature for the current set of actions. After Neutral and each enabled action have been trained at least once, the Cognitiv detection is activated and the cube will respond to the Cognitiv detection, and your mental control, in real time.

Some users will find it easier to maintain the necessary mental focus if the cube is automatically animated to perform the intended action as a visualization aid during training. If you think you will benefit from this, then you may select the *Animate cube according to training action* checkbox.

Otherwise, the cube will remain stationary or, if you have already supplied training data and the detection is active, will be animated by the current detection results for the action being trained, while you supply new training data.
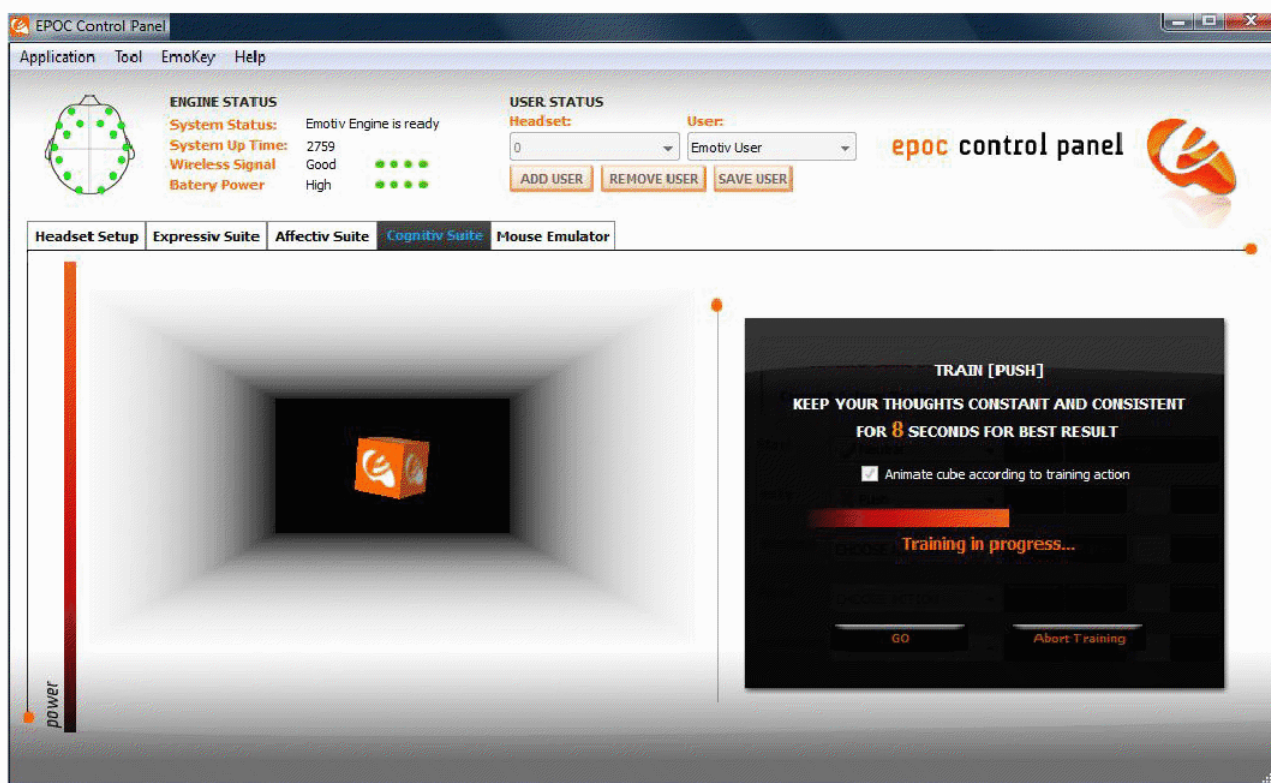

Figure 22 Cognitiv Training of Push with Animate Cube according to Training Action selected

Finally, you are prompted to accept or reject the training recording. Ideal Cognitiv detection performance is typically achieved by supplying consistent training data (i.e. a consistent mental visualization on the part of the user) across several training sessions for each enabled action. The ability to reject the last training recording allows you to decide whether you were able to remain mentally focused on the appropriate action during the last training session. Alternatively, you may press the *Abort Training* button to abort the training recording if you are interrupted, become distracted, or notice problems with the EPOC Headset contact quality indicators during the recording. A training session is automatically discarded if the wireless signal strength or EEG signal quality is poor for a significant portion of the training period. A notification will be displayed to the user if this has occurred.

3.3.4   Training Neutral

The Neutral "action" refers to the user's passive mental state; one that isn't associated with any of the selected Cognitiv actions. While training Neutral, you should enter a mental state that doesn't involve the other Cognitiv actions. Typically this means engaging in passive mental activities such as reading or just relaxing. However, to minimize "false-positive" Cognitiv action results (i.e. incorrect reporting of unintended actions), it may also be helpful to emulate other mental states and facial expressions that are likely to be encountered in the application context and environment in which you'll be using Cognitiv. For many users, providing more Neutral training data will result in better overall Cognitiv performance.

Neutral training must be completed first before any actions can be trained and activated.

3.3.5   Clear Training Button

Occasionally, you may find that a particular trained action doesn't work as well as it once did. This may indicate that the training data used to construct your personalized Cognitiv signature was "contaminated" by a more recent, inconsistent training session or that some characteristics of your brainwaves have changed over time. It may also happen that you wish to change the mental imagery or technique that you associate with a particular action. In either situation, you can use the *RESET* button to delete the training data for the selected action. Keep in mind that doing so will disable the Cognitiv detection until new training data has been recorded for this action.

3.3.6   Cognitiv Tips

Mental dexterity with the Cognitiv Suite is a skill that will improve over time. As you learn to train distinct, reproducible mental states for each action, the detection becomes increasingly precise. Most users typically achieve their best results after training each action several times. Overtraining can sometimes produce a decrease in accuracy –although this may also indicate a lack of consistency and mental fatigue. Practice and experience will help determine the ideal amount of training required for each individual user.

If it becomes hard for you to return to neutral (i.e. to stop the cube from moving) you should try refreshing your mental state by momentarily shifting your focus away from the screen and relaxing. It is easy to become immersed in the experience and to have the Cognitiv actions at the "front of your mind" while trying to be neutral.

Successful training relies on consistency and focus. For best results, you must perform the intended action continuously for the full training period. It is common for novice users to become distracted at some point during the training period and then mentally restart an action, but this practice will result in poorer results than training with a mental focus that spans the entire training period.

A short latency, of up to two seconds, in the initiation and cessation of the cube's animated action on screen is typical.

3.3.7   EmoKey for Cognitiv Actions

EmoKey links the Emotiv technology to your applications by easily converting detected events into any combination of keystrokes. EmoKey is a nonintrusive, lightweight, background process that runs behind your existing games or applications. EmoKey lets you create mappings that define how detections are converted to keystroke combinations. Your mappings can then be saved and shared so you can use mappings that your friends have created for your favorite games and software. EmoKey can be as complex as linking a "lift" command to a sequence of keystrokes that trigger a levitation spell in a game.

To configure a Cognitiv action to EmoKey, select the action you wish to link and click on the *KEY* button to the far right of the *Cognitiv Panel Display*. This will bring up a Configuration Dialogue box as shown in Figure 7. Type into the text box, the specific keystroke(s) you wish to send. You can also make the facial expression send a continuous string of keys by checking the *Hold the key* box.

There are also options to further configure the *Key hold time* and *Key trigger delay time*. Once you are satisfied with the settings, click the *Apply* button.
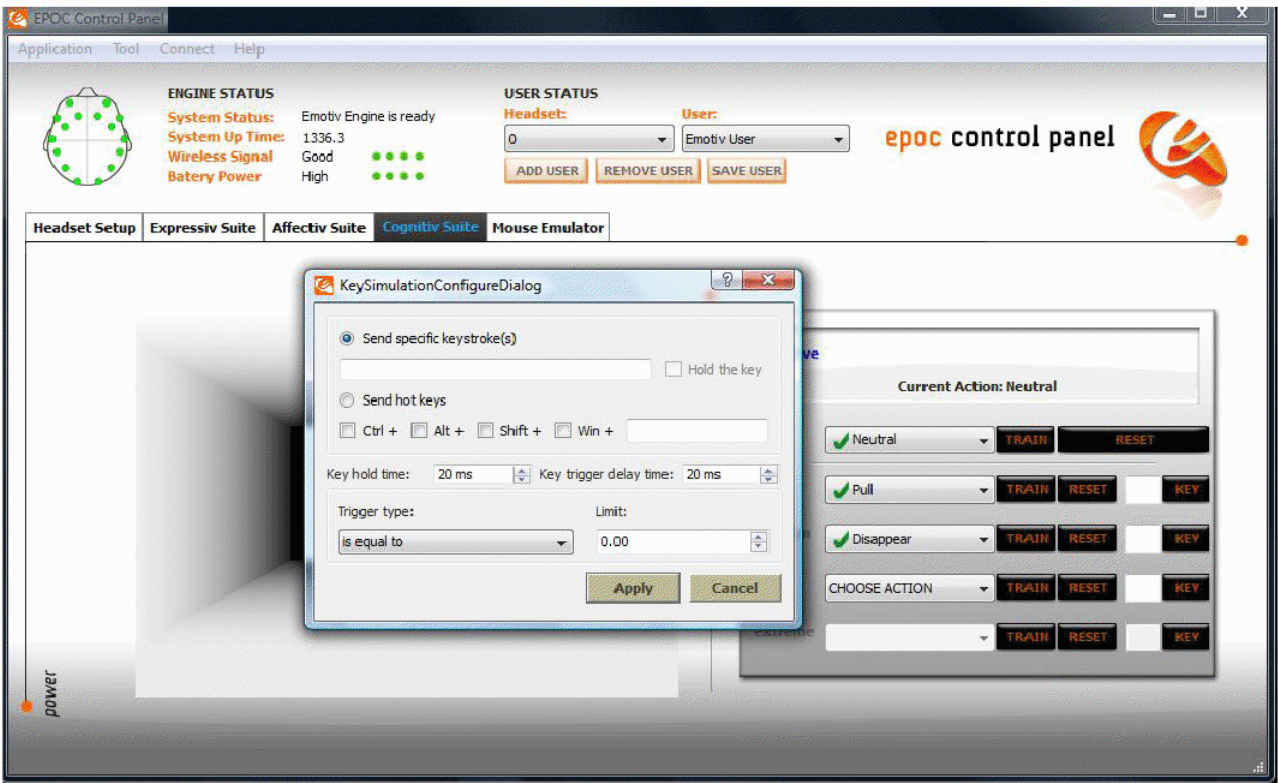
Figure 23 EmoKey Configuration Dialogue box

Once EmoKey is activated, the keystroke(s) allocated to the Cognitiv action will be marked in the corresponding box. An orange highlight will flash in the box to the right of the description of the action being triggered. Only actions that have keystrokes allocated will be sent to an application window that is active. This is shown in Figure 14, where a pull triggers the keystroke "Z".
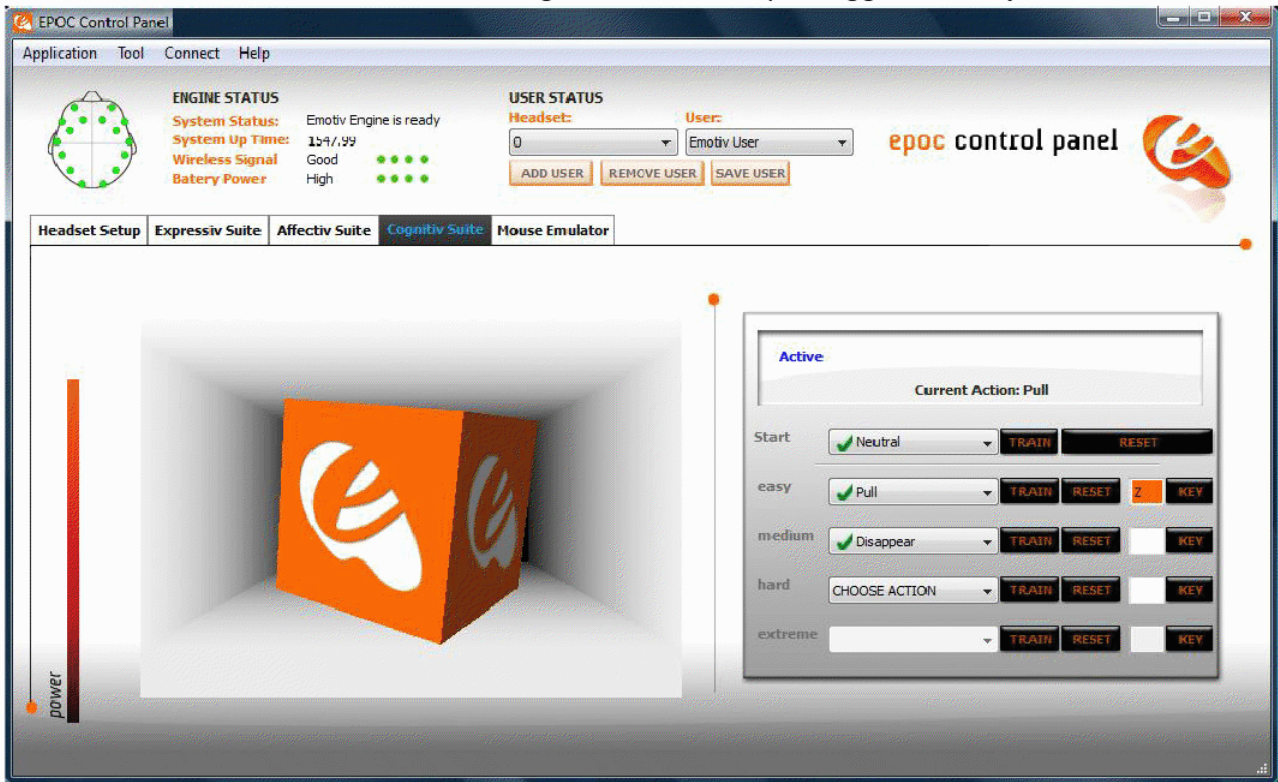

Figure 24 EmoKey in Action Linking Pull to keying in "Z"

3.4   Mouse Emulator

The EPOC headset comes with a built-in gyroscope which enables a range of additional functions. One possible use is mouse cursor control.

3.4.1   Understanding the Mouse Emulator Tab

The Mouse Emulator Tab in the EPOC Control Panel allows you to activate the headset's gyroscope and link it to the control of your computer's mouse cursor.

The left side of the Mouse Emulator Tab provides a visual representation of the gyroscope's relative position. The right side of the Mouse Emulator Tab provides the controls to activate and deactivate this feature along with a slider bar to make sensitivity adjustments.
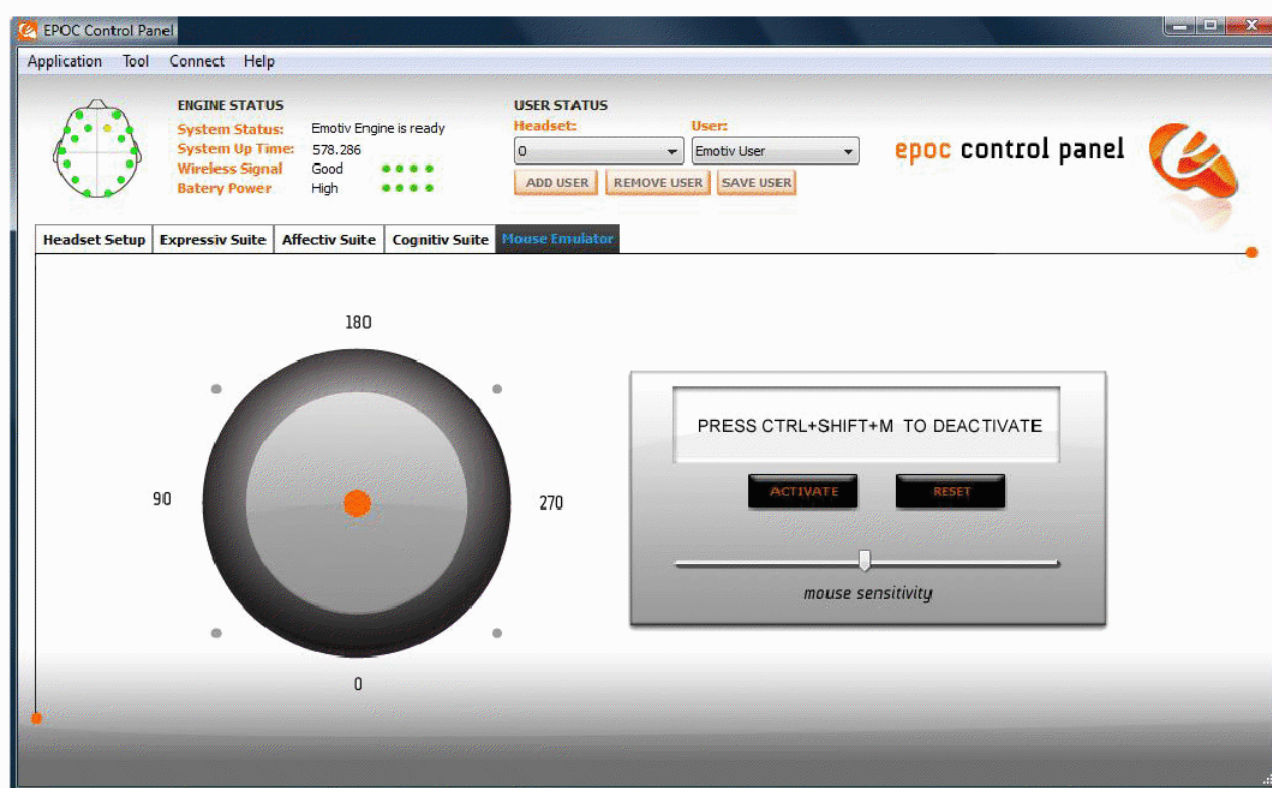

Figure 25 Mouse Emulator Tab

3.4.2   Mouse Emulator Controls

To enable this feature, click on the *Activate* button.   Your mouse will immediately respond based on the movement of your head. Simply turn your head from left to right, up and down. You will also notice the orange indicator dot move in accordance with the movement of your head/gyroscope. The *Mouse Sensitivity* slider allows you to adjust the sensitivity of the gyroscope when controlling your mouse cursor. The *Reset* button allows you to re-centre your position.

To deactivate this feature, use your head movement to move your cursor to the *Deactivate* button and left mouse click, or Press CTRL+SHIFT+M.

4.0   Trouble Shooting and Help

Transceiver Dongle lights don't work (Should see either one slow flashing LED – if unpaired – or one bright and one dim LED – if paired).

- Try different USB port, different computer.
- Check other USB equipment works in same port
- Possible LED failure – carry on regardless

Transceiver Dongle not recognized (USB "ding" on insertion, stream of Hardware Identifier strings observed on first installation)

- Use only on XP, Window Vista and virtual XP/Vista machines in Windows 7 and Mac OS X
- Check Device Manager list as Dongle is inserted and removed.
- Try different USB port, different computer.
- If Control Panel is running it will ask for User Profile selection when the Transceiver Dongle is recognized, whether the headset is paired or not

Does not pair (Transceiver Dongle switches from single slow flashing LED to one bright & one dim LED if correctly paired)

- Check for blue LED on headset (recharge headset if absent).
- Hold headset very close to USB, switch off and on.
- Unplug and replace Transceiver Dongle in USB port, repeat pairing attempt
- Obtain a USB male - USB female extension cable and plug into the PC. Attach the Transceiver Dongle to the extension cable and position in a prominent location away from your PC, monitor, wireless router and other sources of radio-frequency interference.
- Turn off or disconnect other wireless and Bluetooth devices in the area to isolate possible causes

Weak wireless connection or repeated drop-outs (expected range 3-5 metres within line of sight)

- Move closer to the Transceiver Dongle
- Obtain a USB male - USB female extension cable and plug into the PC. Attach the Transceiver Dongle to the extension cable and position in a prominent location away from your PC, monitor, wireless router and other sources of radio-frequency interference.

- Turn off or disconnect other wireless and Bluetooth devices in the area to isolate possible causes

- Turn off headset, unplug Transceiver Dongle and repeat the pairing exercise

All sensors black except RED references (directly below ears on Contact Quality map)

- Start with RUBBER COMFORT PADS in locations directly behind the ears.

- The primary reference sensor locations are behind the head, elevated at about 30 degrees backwards behind the ears (see diagram in main section of this manual)

- Ensure reference sensors and at least one forehead sensor are sufficiently wet

- Ensure all sensors are properly located in the headset receptacles. They should not spin or fall out when gently moved.

- Try to minimize the amount of hair trapped underneath the reference sensors. The headset can be wriggled to allow the sensors to pass through the hair, or you can try to displace some of the hair with a pencil or similar.

- Gently press reference sensors onto the head for at least 5 seconds, then release. It may take another 20 seconds or so for the sensors to respond.

- Gently press wet forehead sensor for 5 seconds then release. It may take another 20 seconds or so for the sensors to respond.

- If still no signals, switch reference sensors to the alternate location as follows: remove the RUBBER COMFORT PADS (including the plastic holders) from their location behind the ears. They should twist out just like any of the sensors. Move the felt pads from the usual reference locations and place them in the sockets recently vacated by the RUBBER COMFORT PADS. You can put the COMFORT PADS into the original reference sockets, or leave them out if you prefer. Make sure you don't lose them if you choose to leave them out.

- Make sure the sensors are sufficiently damp and repeat the above procedure, taking care to locate the new reference sensors onto a patch of bare skin on or near the bony lump located just behind the ear flap. Within a few seconds the sensors should come to life, especially if you press gently on some of the other sensors for a few seconds.

One or both of the sensors immediately adjacent to the ears remains black.

- These sensors are located on the main body of the Arm assembly, closest to the arm pivot point. They detect activity in the temporal lobes and are known as T7 (left side) and T8 (right side). A combination of the shape of the arm assembly and the user's head shape (particularly long, narrow heads with relatively flat sides) can sometimes result in these sensors failing to touch the head, being held off by some of the other sensors.

- Check that the sensors are clean and attached properly as per the general comments in the next section

- Check that the sensors are clean and attached properly as per the general

- Remove the RUBBER COMFORT PAD including the plastic holder, from the side or sides where the contact cannot be achieved. The headset can be worn comfortably without these pads for people with this head shape, and no harm will come to the connector sockets because they are fully enclosed. The change in balance point is usually sufficient to ensure contact occurs.

- In the unlikely event that contact is still impossible to obtain, you can use a longer felt pad or use a cotton ball soaked in saline to fill the gap or replace the felt piece.

One or more sensors remain black or red for every fitting and user

- Check that the sensor is properly located in the socket. It should click firmly in place, the finger tabs should be aligned along the axis of the arm and it should not freely rotate in the socket.

- Check that the sensor is sufficiently damp for operation

- Check that the sensor is applying gentle but positive pressure to your head in this location. When pressed, it should not move inwards. You may find that slightly relocating the headset settles the sensors into a better location

- Remove the headset and gently press the felt pad into the sensor. It should protrude by no more than 2mm. It should also feel damp and be free of obstructions.

- Remove the sensor and inspect it. The sensor should have a felt pad on the front side and a domed gold-plated metal plate which is visible from the rear side. The metal plate should be clean and free of obstructions at least across the central third of the domed section in order to make proper contact when inserted.

- Check the socket. Make sure the gold contact plate is clean and there is nothing trapped in tha socket which could affect the contact. The gold contacts inside the socket consist of three spring tabs which bend slightly upwards towards the sensor. Make sure they are not bent away, damaged or dirty.

- Swap a different sensor into that location from somewhere that is known to be working. This will eliminate a faulty sensor

- Please contact Customer Service if you cannot resolve this problem and the location seems to be failing for each fitting and all users.

If you have other problems or your problem is not rectified by the above procedures, please check the Emotiv website www.emotiv.com for further information and updated Troubleshooting information, or email customerservice@emotiv.com for further assistance.

EMOTIV SYSTEMS INC.

HARDWARE WARRANTY AND RETURN POLICY

This Warranty and Return Policy contains the complete terms and conditions between Emotiv Systems Inc. ("**We**" or "**Emotiv**") and you regarding your purchase of an Emotiv product ("**Product**").

1. Limited Warranty

a) Limited Warranty. Emotiv warrants that the Product shall be free from defects in material or workmanship under normal use for one hundred eighty (180) calendar days beginning from the date of shipping of your original purchase ("**Limited Warranty**").

b) Return Process. If you believe that the Product does not meet the Limited Warranty:

   i. Please email returns@emotiv.com to obtain a Return Material Authorization (RMA) number, shipping address and instructions from Emotiv.

   ii. Returned Products must be packed in the original, unmarked packaging including any accessories, manuals, documentation and registration that was included with the Product. Please include a description of the problem. You must prepay all shipping charges, and Emotiv recommends that you (1) use a carrier that offers shipment tracking for all returns and (2) either insure your package for safe return to Emotiv or declare the full value of the shipment so that you are completely protected if the shipment is lost or damaged in transit. You are fully responsible for any loss or damage to the Product during shipping.

c) Remedy. Emotiv's sole obligation, and your sole remedy, for a breach of the Limited Warranty shall be as described in this Section 1(c). Emotiv shall determine in its sole discretion whether the Product contains a material or workmanship problem. If so determined, Emotiv shall in its sole discretion: (i) repair the Product using new or refurbished parts, (ii) replace the Product with a new or refurbished Product or (iii) refund to you the amount you paid for the Product based on your original method of payment. For the purposes of this Limited Warranty, "refurbished" means a Product or part that has been returned to its original specifications. Replaced parts and exchanged Products will become the property of Emotiv. The Limited Warranty gives you specific legal rights and you may have other rights which vary by jurisdiction.

d) Exclusions. The Limited Warranty does not apply in the following cases:

   i. Damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes.

   ii. If a Product is defective as a result of leaking batteries or liquid damage.

   iii. Defective materials or workmanship where the defect is due to a Product having been serviced or modified by a party other than Emotiv or an Emotiv authorized service provider.

   iv. Malfunction resulting from the use of accessories, attachments, product suppliers, parts or devices with the Product that do not conform to Emotiv's specifications or are not supplied by Emotiv.

   v. Damage occurring during shipment.

   vi. Damage or service resulting from modifications or alterations to a Product in any way (including any alteration or removal of its serial number or identification marks).

2. **Exclusions**. Your option to return the Product under the Limited Warranty does not apply to the following Products:

   i. Electronic software downloads.

   ii. Upgrades to Products provided by Emotiv

3. **Warranty Disclaimer**. EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY AND RETURN POLICY, THE PRODUCT AND ALL SERVICES ARE PROVIDED "AS IS". NEITHER EMOTIV NOR ITS SUPPLIERS MAKES ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. YOU MAY HAVE OTHER STATUTORY RIGHTS. HOWEVER, TO THE FULL EXTENT PERMITTED BY LAW, THE DURATION OF STATUTORILY REQUIRED WARRANTIES, IF ANY, SHALL BE LIMITED TO THE LIMITED WARRANTY PERIOD.

4. **Limitation of Liability**. NEITHER PARTY SHALL BE LIABLE FOR ANY LOSS OF USE, LOST DATA, FAILURE OF SECURITY MECHANISMS, INTERRUPTION OF BUSINESS, OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND (INCLUDING LOST PROFITS), REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, EVEN IF INFORMED OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE. NOTWITHSTANDING ANY OTHER PROVISION OF THIS WARRANTY AND RETURN POLICY, EMOTIV'S AND ITS SUPPLIERS' ENTIRE LIABILITY TO YOU SHALL NOT EXCEED THE AMOUNT ACTUALLY PAID BY YOU TO EMOTIV FOR THE PRODUCT. The parties agree that the limitations specified in this Section 4 will survive and apply even if any limited remedy specified herein is found to have failed of its essential purpose. Some jurisdictions do not allow limitations on how long an implied warranty lasts, or allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

5. **Governing Law.** This Warranty and Return Policy shall be governed by the laws of the State of California and the United States without regard to conflicts of laws provisions thereof. Unless waived by Emotiv in its sole discretion, the jurisdiction and venue for any action arising out of or relating to the subject matter of this Warranty and Return Policy shall be the California state and United States federal courts located in San Francisco, California, and you hereby submit to the personal jurisdiction of such courts.