

# NEUROLYNQ USER GUIDE v3.1

Rev. a



by  shimmer

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# WHAT'S NEW IN THIS RELEASE

*NeuroLynQ v3.1 brings a number of new features to perform the analysis of recorded NeuroLynQ@Home trial.*

## Updates:

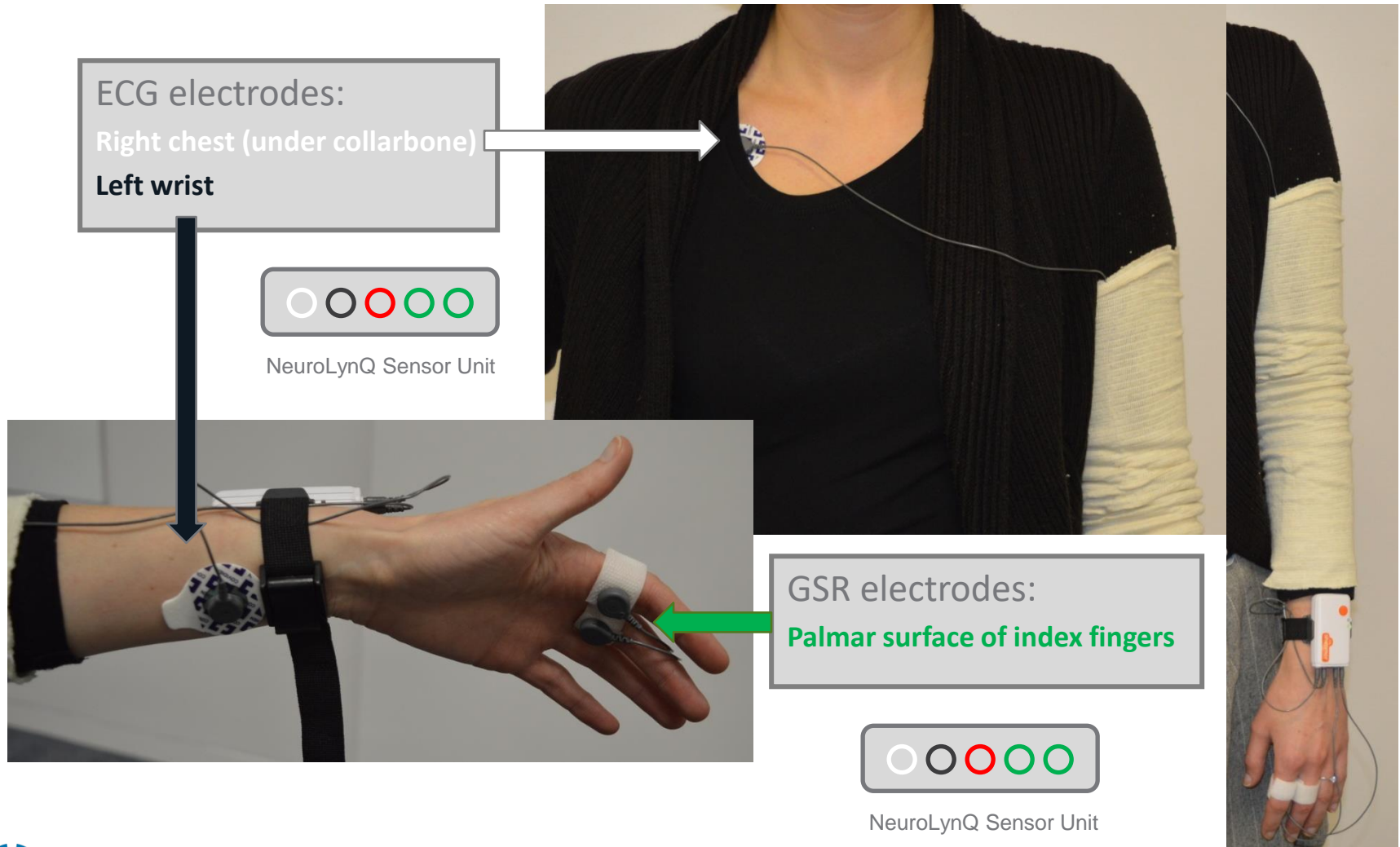
- Option to Load Event Marker File
- New Manage Data tab buttons – Refresh, Download
- NeuroLynQ@Home Trial Settings panel

# INTRODUCTION

- The Shimmer NeuroLynQ solution integrates both hardware and software to provide unprecedented insight into the emotional responses and implicit reactions of a large group.
- The solution can be applied to a variety of applications such as:
  - Focus Groups
  - Movie Screenings
  - Mock Jury Trials
  - Video Ad Testing
  - Athletic Events
  - Pilot Screenings
  - Education
  - Workforce training



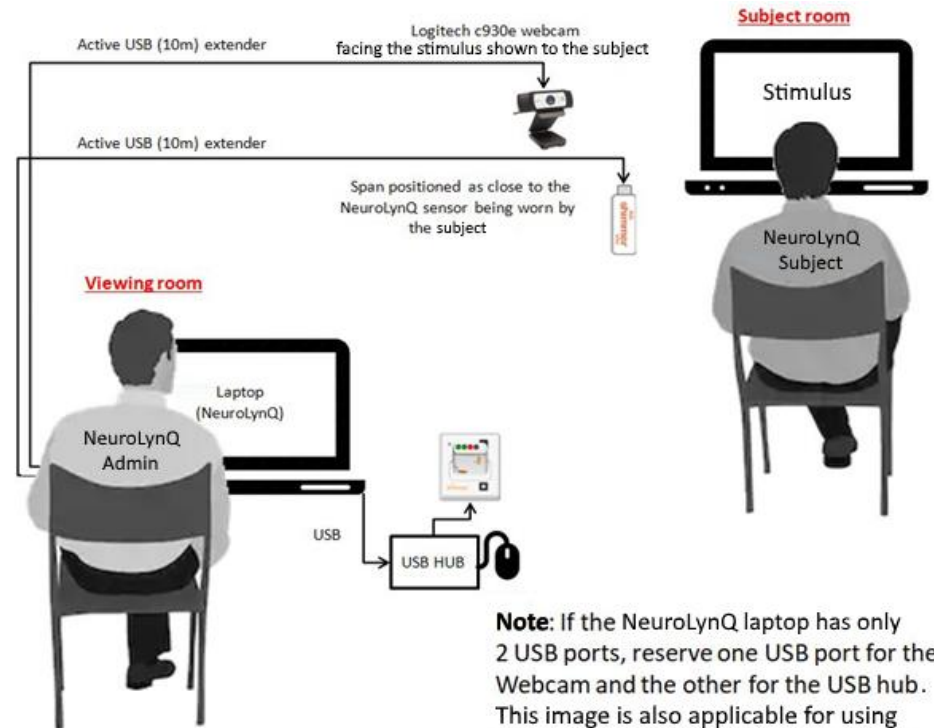
# NEUROLYNQ SETUP (SENSOR)



# NEUROLYNQ SETUP (SYSTEM)

## Recommendations

1. It is preferable if the NeuroLynQ admin is located in another room to the NeuroLynQ subject(s) or at the very least outside of the subject(s) line of sight.
2. Position the span radio module where it has the best line of sight with each NeuroLynQ sensor (often this is above the subjects).
3. Position the webcam so that the stimulus can be easily observed by the NeuroLynQ admin so that event marking is easier.



**Note:** It is recommended to insert the webcam and NeuroLynQ span directly into the USB ports on the laptop running NeuroLynQ via the active USB extenders and **not through** a USB hub. If the laptop running NeuroLynQ has only two USB ports then it is recommended to allocate one USB port for the webcam and the other USB port for the USB hub.

# INSTALL HARDWARE (1/8)

STEP 1 – Connect the USB Hub to its AC adapter. Insert the power plug into a mains power socket.

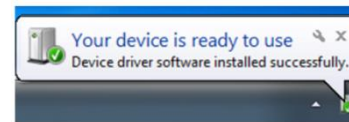
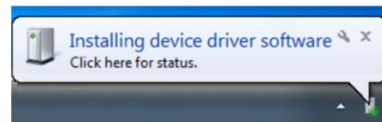
STEP 2 – Connect the USB Hub to its USB cable. Insert the other end into a USB Port of the PC either directly or via the supplied USB extender and UTP cable.

STEP 3 – Connect each *Base* with an AC adapter. Ensure you match the AC adapters accordingly, 3.5A for Base6 and 5A for Base15.

STEP 4 – Plug a power cable into each AC adapter and the other end into a mains power socket.

STEP 5 – Connect each *Base* to an USB Port on the PC (using the supplied USB-to-MiniUSB cable). Alternatively, the extra USB Port on a *Base* can be used to link other *Bases* together in a chain.

STEP 6 – Windows will now install the drivers for the *Base*. Status feedback is given in Windows' system tray (right bottom corner of the screen):



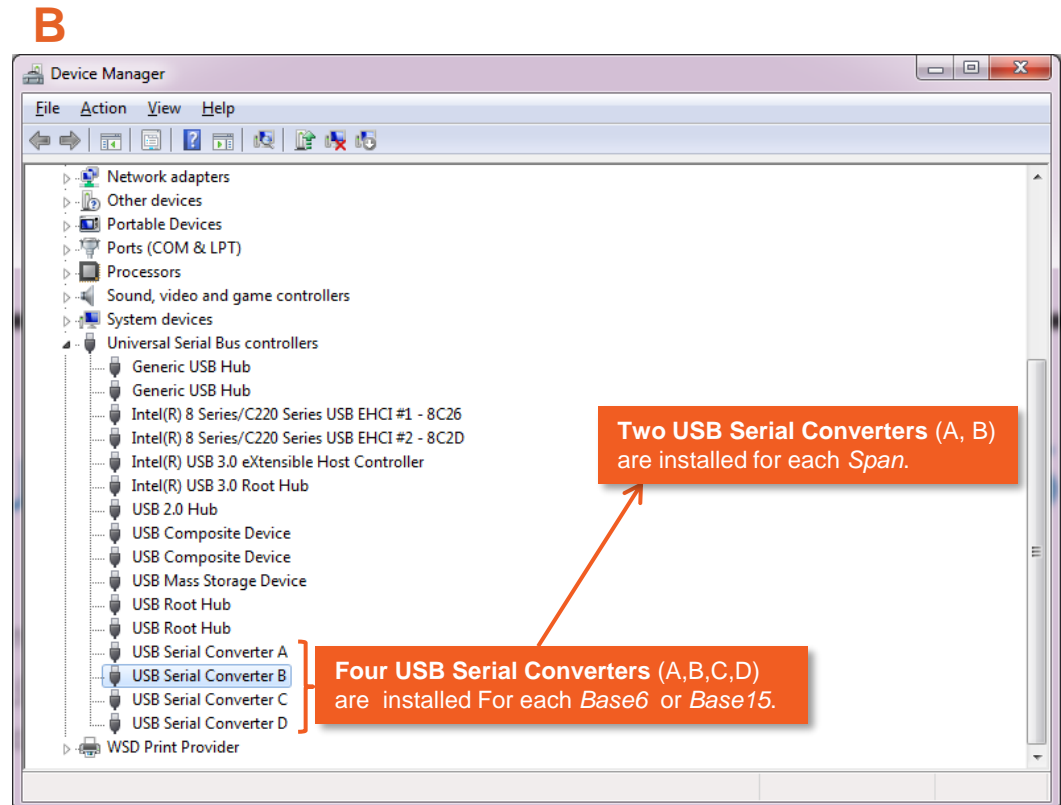
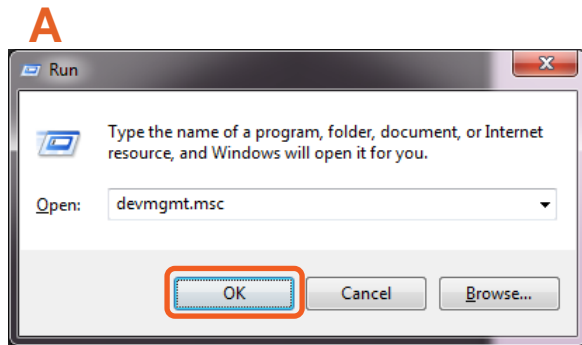
**N.B.** The driver installation can take up to a few minutes at the end of which the system tray icon will disappear. In case you are not sure if the installation has finished, proceed to the next STEP to verify the driver installation.

**N.B.** The screenshots in this section are made using Windows 7. The screens on your PC might look slightly different.

# INSTALL HARDWARE (2/8)

STEP 7 – Verify driver installation:

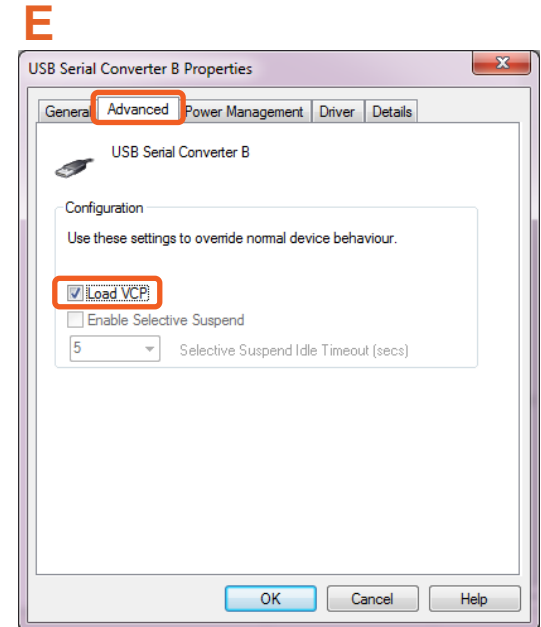
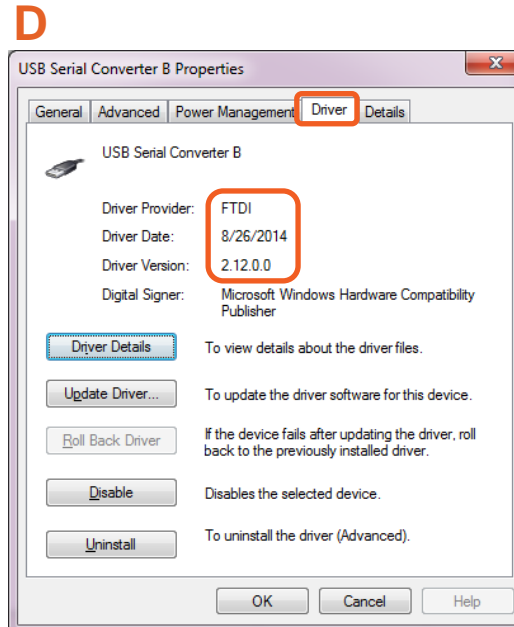
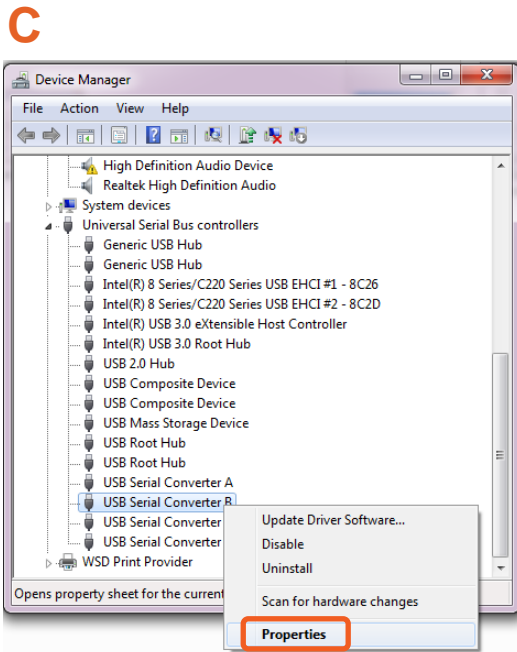
- A. Run the Device Manager: Press [Windows Key] + R; type *devmgmt.msc*; click “OK”.
- B. Expand the ‘Universal Serial Bus Controllers’ category.



# INSTALL HARDWARE (3/8)

STEP 8 – Verify driver installation - continued:

- C. Right-click on one of the USB Serial Converters; click **Properties**.
- D. Go to “Driver”; check if **FTDI Driver v2.12.0.0** or later is installed → **Correct Driver has been installed!**
- E. Go to “Advanced”; make sure **Load VCP** is checked.
- F. Repeat for the other USB Serial converters. If the correct driver is installed for all USB Serial Converters the driver installation has been successful and the hardware is successfully setup – proceed to “Installing the software”.



# INSTALL HARDWARE (4/8)

STEP 9 – Download the FTDI Driver:

- A. Go to <http://www.ftdichip.com/Drivers/VCP.htm>.
- B. Download the latest Windows “setup executable”.

Currently Supported VCP Drivers:

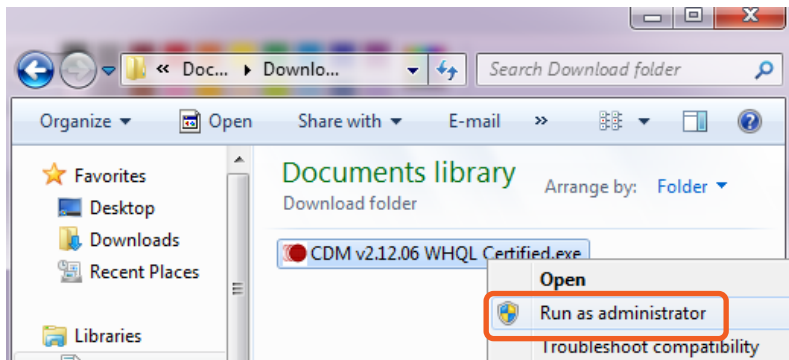
Operating System	Release Date	Processor Architecture							Comments
		x86 (32-bit)	x64 (64-bit)	PPC	ARM	MIPSII	MIPSIV	SH4	
Windows*	2015-07-28	<a href="#">2.12.06</a>	<a href="#">2.12.06</a>	-	-	-	-	-	2.12.06 WHQL Certified Available as <a href="#">setup executable</a> <a href="#">Release Notes</a>
Linux	2009-05-14	<a href="#">1.5.0</a>	<a href="#">1.5.0</a>	-	-	-	-	-	All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19 Refer to <a href="#">TN-101</a> if you need a custom VCP VID/PID in Linux
Mac OS X 10.3 to 10.8	2012-08-10	<a href="#">2.2.18</a>	<a href="#">2.2.18</a>	<a href="#">2.2.18</a>	-	-	-	-	Refer to <a href="#">TN-105</a> if you need a custom VCP VID/PID in MAC OS
Mac OS X 10.9 and above	2015-04-15	-	<a href="#">2.3</a>	-	-	-	-	-	This driver is signed by Apple
Windows CE 4.2-5.2**	2012-01-06	<a href="#">1.1.0.20</a>	-	-	<a href="#">1.1.0.20</a>	<a href="#">1.1.0.10</a>	<a href="#">1.1.0.10</a>	<a href="#">1.1.0.10</a>	
		<a href="#">1.1.0.20</a>			<a href="#">1.1.0.20</a>				

# INSTALL HARDWARE (5/8)

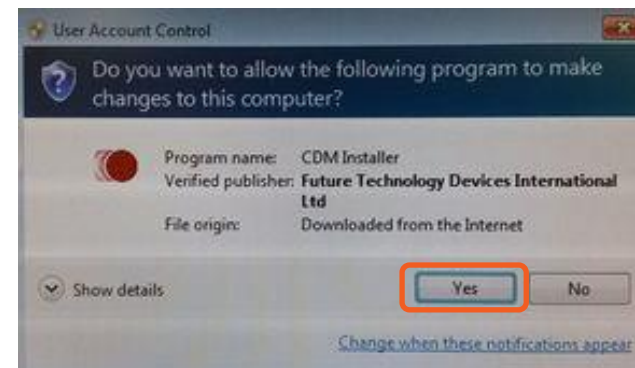
STEP 10 – Manual Driver installation:

Right-click the downloaded file;

“Run as administrator”:



Press “Yes” if this screen if shown:

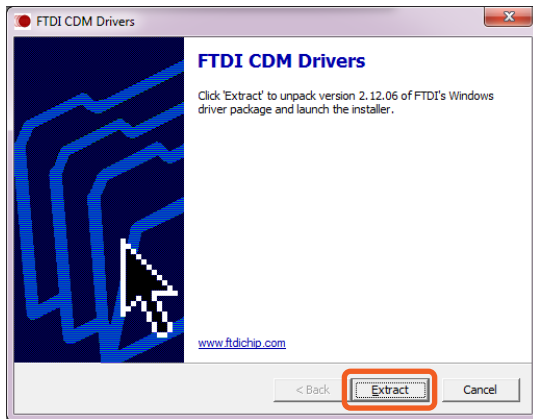


**N.B.** If a security warning pops up, click “Run”.

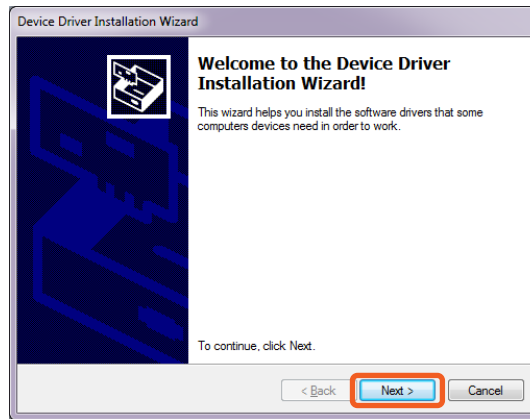
# INSTALL HARDWARE (6/8)

STEP 11 – Manual Driver installation - continued:

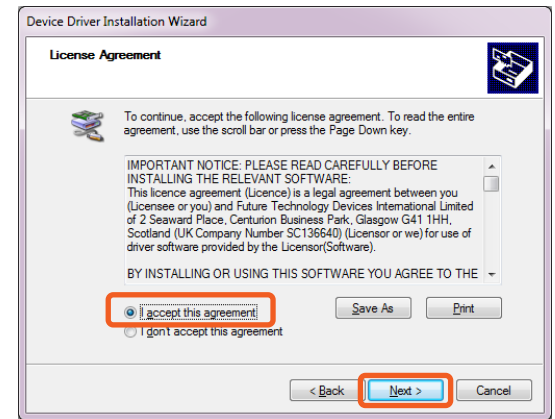
Click “Extract”:



Click “Next”:



Accept and click “Next”:

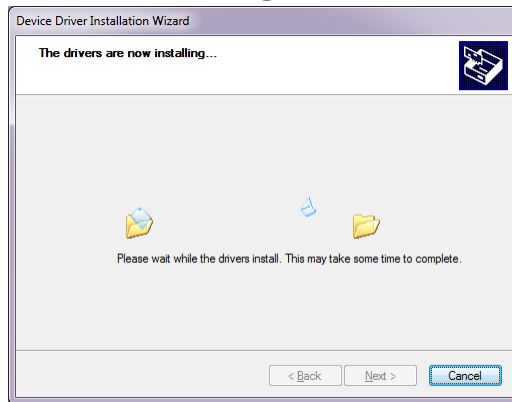




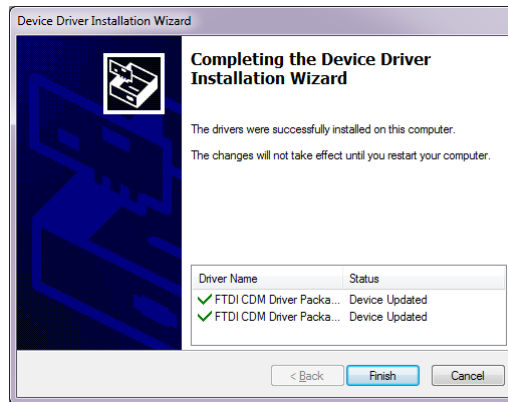
# INSTALL HARDWARE (7/8)

STEP 12 – Manual Driver installation - continued:

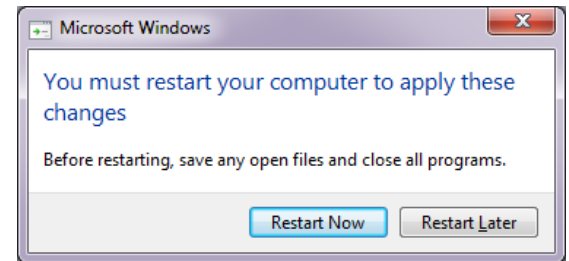
Drivers are installing:



Click "Finish":



Click "Restart Now":



**N.B.** After restart, repeat STEP 7 before proceeding!

# INSTALL HARDWARE (8/8)

## The NeuroLynQ software supports the use of a HD webcam:

The drivers for the webcam should install automatically when inserting it into the NeuroLynQ server

- If the driver fails to install, please visit the manufacturer's website ([http://support.logitech.com/en\\_us/product/webcam-c930e-business](http://support.logitech.com/en_us/product/webcam-c930e-business))
- The use of a webcam is not a requirement in order for the software to run and its use is at the user's discretion



Webcam Logitech HD C930e



The screenshot displays the NeuroLynQ software interface. The top navigation bar includes 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main content area is divided into two panels. The left panel, titled 'AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)', shows a list of unpaired devices under 'Span.01' with columns for ID, status, and signal strength. Below this list is a 'WEBCAM: None' section with an 'Enable Webcam' button. The right panel, titled 'AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)', shows hardware details for 'Span.1' and 'Docks/Bases: 1'. It features a central graphic of a base with six slots, and three large buttons: 'RECOVER', 'PLAYBACK', and 'START'. Below these buttons is a 'SPECTRUM ANALYSER' section with a graph and a table of results.

Rating	Channel	Freq (MHz)
1	11	2450
2	12	2410
3	13	2415
4	14	2420
5	15	2425
6	16	2430

# INSTALL SOFTWARE

**N.B.** Only continue with installing the NeuroLynQ software if the driver installation has been verified (Install Hardware - STEP 8).

STEP 1 – Obtain the latest *NeuroLynQ* software.

STEP 2 – Extract the installer zip-file.

STEP 3 – Double-click “*setup.exe*” and follow the instructions.

STEP 4 – When the installation is complete, double-click the *NeuroLynQ* desktop icon to start.

# LICENSING - OVERVIEW (1/3)

**N.B.** NeuroLynQ requires a license to utilize the software

**Subscription:** Subscription license permits the use of NeuroLynQ for a specified time period after which time the subscription must be renewed in order to use the application. NeuroLynQ implements an annual subscription (365 day period).

**Floating:** Floating licensing authorizes the use of NeuroLynQ with the given number of activations. The number of concurrent activations is tracked, and the total number of running sessions of the licensed application at any time is limited by the maximum allowed activations in the floating licenses purchased by the licensee.

**NeuroLynQ Sensor Limit:** The number of NeuroLynQ sensor units you can use simultaneously in the software is a parameter of the license. If you buy a license for one NeuroLynQ sensor unit, you can only use the software with one unit at a time. Contact Shimmer for more info through [info@shimmersensing.com](mailto:info@shimmersensing.com)

# LICENSING - ACTIVATION (2/3)

N.B. NeuroLynQ requires a license to utilize the software

**shimmer**

**NeuroLynQ**

Thank you for choosing NeuroLynQ, which utilizes Shimmer's award winning, scientifically validated sensing platform, GSR and ECG data capture are merged within a single sensor. NeuroLynQ can be configured to measure the emotional response of an audience of up to 45 people simultaneously.

**NeuroLynQ**  
for up to 45 Shimmers

License Key (Enter the 9-digit key below)

**ACTIVATE NOW**

or [purchase now](#)

Activate NeuroLynQ software  
(license key required)

# LICENSING - MANAGEMENT (3/3)

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Help  
User Guide  
Video Assistant  
Manage Licenses  
About

Help -> Manage Licenses

License details

Licensee details

You can deactivate an activation for NeuroLynQ to free up an activation for another computer

**N.B.** You can only deactivate the license for the computer you are working on!

Manage Activations

shimmer

Manage Activations

Review the licenses' details on the left and managing existing licensee activations on the right. You can only deactivate a license if it's assigned to this PC. To deactivate a license, select 'Deactivate' for the activation name you want to deactivate.

License Details

Customer:	Shimmer_NeuroLynQ	ⓘ
License Model:	Subscription and Floating	ⓘ
License Expiry:	2018/10/31 (306 days remaining)	ⓘ
Number of Shimmers:	45	ⓘ
Activations Purchased:	3	ⓘ
Activations Active:	1	ⓘ

Licensee Activations

Name	Action	Status	This PC
rmolloy	Deactivate	✔	✔
User	N/A	✔	✘

DONE

# CONDUCT A NEUROLYNQ@HOME TRIAL

STEP 1 – Create an S3 server and obtain the S3 Access and Secret Keys.

STEP 2 – Create the bucket to store the trial recording files.

STEP 3 – Generate NeuroLynQ@Home settings file through NeuroLynQ > Application Settings > NeuroLynQ@Home

STEP 4 – Load the settings file into NeuroLynQ@Home and enter Participant ID. No repeat of Participant ID in different caps.

STEP 5 – Follow the instructions to wear the sensor and then connect it to start the trial.

STEP 6 – The trial database and video recording file (if available) will be uploaded to S3 server once the trial is stopped

STEP 7 - To analyze/aggregate participant response, you will need to download all the participant databases via NeuroLynQ by using the Download button in Manage Data tab. Each participant will be a single database represented in the Manage Data tab

The screenshot shows the 'MANAGE DATA' tab in the NeuroLynQ@Home interface. It features a table titled 'AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)'. The table has columns for NAME, SYNC, RTC, TIME, DURATION, SIZE, CONFIG, and PLAY. The data rows are as follows:

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	115.93 MB		
SampleNeuroLynQ@Home			2021/04/15 16:35:55	00:01:00	0.00 KB		
PC Recording							
Session 1 - ~99.9% - 1 Device	✓		2021/04/15 16:38:14	00:01:00	N/A	⚙️	▶️
Shimmer_D1E5 - 256.0Hz - ~99.9%	✓		2021/04/15 16:38:14	00:01:00	N/A		
Aggregator_Fusion_Response							

Annotations in the image include:

- An orange box with the text 'NeuroLynQ@Home trial downloaded into NeuroLynQ' with an arrow pointing to the 'SampleNeuroLynQ@Home' row.
- An orange box with the text 'Note that the Playback feature is not compatible with NeuroLynQ@Home trial' with an arrow pointing to the 'PLAY' column of the 'Session 1' row.

# HOME SCREEN

The screenshot shows the NeuroLynQ Home Screen interface. At the top left, the NeuroLynQ logo and the Shimmer logo are visible. The top navigation bar includes 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. On the top right, there is a trial status indicator showing 'Trial: N/A', 'Config Time: N/A', and 'Session: N/A' with a timer at '00:00:00'. In the top right corner, there are icons for Notifications, Settings, and Help. The main content area features four tiles: 'Manage Devices', 'Live Data', 'Manage Data', and 'Analytics'. The 'Manage Devices' tile is highlighted with an orange border and a callout box that says 'Click on this tile to start.'. The 'Notifications' icon has a callout box that says 'Notifications.'. The 'Settings' icon has a callout box that says 'Applications Settings, see "Application Settings" section.'. The 'Help' icon has a callout box that says 'Help.'.

NeuroLynQ

shimmer

MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Notifications.

Applications Settings, see "Application Settings" section.

Help.

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions

Click on this tile to start.



# MANAGE DEVICES – PART 1 – ADD WEBCAM

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

Span.01 Ch: 25 Mode: Idle

UNPAIRED (6)

ID	Shimmer ID	Status	Power	Signal	Mode
016A	Shimmer_016A	Unpaired	0 dBm	0.0	Idle
0169	Shimmer_0169	Unpaired	0 dBm	0.0	Idle
0160	Shimmer_0160	Unpaired	0 dBm	0.0	Idle
011E	Shimmer_011E	Unpaired	0 dBm	0.0	Idle
0053	Shimmer_0053	Unpaired	0 dBm	0.0	Idle
0052	Shimmer_0052	Unpaired	0 dBm	0.0	Idle

WEBCAM: None

Enable Webcam

Enable a webcam to Record video/audio as well as NeuroLynQ data

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Spans: 1 Docks/Bases: 1 Shimmers: (6/6)

Choose webcam and audio source

Choose webcam source: Logitech HD Pro Webcam C930e

Choose audio source: Microphone (HD Pro Webcam C930e)

PLAYBACK

Select the correct video And audio source i.e Logitech C930e

SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)

Rating	Channel	Freq (MHz)
1	25	2475
2	26	2480
3	20	2450
4	19	2445
5	18	2440
6	11	2405

RESET CLEAR SD (6/6) FIRMWARE (6/6) CONFIGURE (6/6) IMPORT (6/6)

**NB:** The use of a webcam is not a requirement in order for the software to run and it's use is at the user's discretion

# MANAGE DEVICES – PART 1 – ADD WEBCAM

The screenshot displays the NeuroLynQ software interface. The top navigation bar includes 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main area is divided into two panels: 'AVAILABLE DEVICES' and 'AVAILABLE HARDWARE'. The 'AVAILABLE DEVICES' panel shows a list of unpaired devices under 'Span.01', including Shimmer\_016A through Shimmer\_0052. The 'AVAILABLE HARDWARE' panel shows hardware details for 'Span: 1', 'Docks/Bases: 1', and 'Shimmers: (6/6)'. A central video feed shows a person at a computer workstation. Three orange callout boxes provide instructions: 1. 'Controls to maximise and minimise the webcam window Including a function to pop out the webcam' (pointing to window controls). 2. 'Audio meter to indicate whether the audio source is functioning on the webcam and a record indicator to show if the video is being recorded to a file' (pointing to a green audio meter and a red record icon). 3. 'Slide out webcam overlay settings used to configure the data trace on the webcam feed' (pointing to a settings overlay on the video feed). The bottom of the interface features buttons for 'RESET', 'CLEAR SD (6/6)', 'FIRMWARE (6/6)', 'CONFIGURE (6/6)', and 'IMPORT (6/6)'. A 'SPECTRUM RESULTS' table is visible on the right side of the hardware panel.

Rating	Channel	Freq (MHz)
1	25	2475
2	26	2480
3	20	2450
4	19	2445
5	18	2440
6	11	2405

**NB:** The use of a webcam is not a requirement in order for the software to run and it's use is at the user's discretion

# MANAGE DEVICES – PART 1 - CONFIGURE

1) Select a Shimmer.

2) Change the Shimmer Name for the selected Shimmer; if changing this is desired.

3) After the Shimmer Name has been changed for all Shimmers, click 'WRITE CONFIG'.

LOCATION	BT RADIO ID	EXPANSION	SHIMMER NAME
Base6U.01.01	0053	ShimmerGG 802.15.4	Shimmer_0053
Base6U.01.02	0052	ShimmerGG 802.15.4	Shimmer_0052
Base6U.01.03	0169	ShimmerGG 802.15.4	Shimmer_0169
Base6U.01.04	011E	ShimmerGG 802.15.4	Shimmer_011E
Base6U.01.05	0160	ShimmerGG 802.15.4	Shimmer_0160
Base6U.01.06	016A	ShimmerGG 802.15.4	Shimmer_016A

SHIMMER NAME: Shimmer

BT RADIO ID: \_0053

SAMPLING RATE (Hz): 256.00

WRITE CONFIG

# MANAGE DEVICES – PART 1 - CONFIGURE

The screenshot displays the NeuroLynQ Shimmer Manage Devices interface. At the top, there are navigation tabs for 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main area shows a table of devices and two sensor panels labeled 'OSR' and 'ECG'. Below the main interface, three 'Configuration Progress' dialog boxes are overlaid, showing the status of configuration for various devices. The first dialog shows 0% completion, the second shows 60.0% completion, and the third shows 'Configuration Complete'. A red box highlights the 'DONE' button in the 'Configuration Complete' dialog, with the number '4' next to it. A 'WRITE CONFIG' button is visible at the bottom right of the main interface.

4) Click 'DONE' when configuration is complete.

LOCATION	BT RADIO ID	EXPANSION	SHIMMER NAME
Base6U.01.01	0053	ShimmerGQ 802.15.4	Shimmer_0053
Base6U.01.02	0052	ShimmerGQ 802.15.4	Shimmer_0052
Base6U.01.03	0169	ShimmerGQ 802.15.4	Shimmer_0169
Base6U.01.04	011E	ShimmerGQ 802.15.4	Shimmer_011E
Base6U.01.05	0160	ShimmerGQ 802.15.4	Shimmer_0160
Base6U.01.06	016A	ShimmerGQ 802.15.4	Shimmer_016A

LOCATION	BT RADIO ID	NAME	STATUS	PROGRESS
Base15U.01.08	014C	Shimmer_014C	Pending	<input type="checkbox"/>
Base15U.01.10	014D	Shimmer_014D	Pending	<input type="checkbox"/>
Base15U.01.12	0140	Shimmer_0140	Pending	<input type="checkbox"/>
Base15U.02.14	0156	Shimmer_0156	Pending	<input type="checkbox"/>
Base6U.01.03	011E	Shimmer_011E	Pending	<input type="checkbox"/>

LOCATION	BT RADIO ID	NAME	STATUS	PROGRESS
Base15U.01.08	014C	Shimmer_014C	Success	<input checked="" type="checkbox"/>
Base15U.01.10	014D	Shimmer_014D	In Progress	<input type="checkbox"/>
Base15U.01.12	0140	Shimmer_0140	Pending	<input type="checkbox"/>
Base15U.02.14	0156	Shimmer_0156	Success	<input checked="" type="checkbox"/>
Base6U.01.03	011E	Shimmer_011E	Success	<input checked="" type="checkbox"/>

LOCATION	BT RADIO ID	NAME	STATUS	PROGRESS
Base15U.01.08	014C	Shimmer_014C	Success	<input checked="" type="checkbox"/>
Base15U.01.10	014D	Shimmer_014D	Success	<input checked="" type="checkbox"/>
Base15U.01.12	0140	Shimmer_0140	Success	<input checked="" type="checkbox"/>
Base15U.02.14	0156	Shimmer_0156	Success	<input checked="" type="checkbox"/>
Base6U.01.03	011E	Shimmer_011E	Success	<input checked="" type="checkbox"/>

# MANAGE DEVICES – PART 1 – START TRIAL

The screenshot displays the NeuroLynQ software interface. On the left, the 'AVAILABLE DEVICES' panel shows a list of unpaired devices under 'Span.01', including Shimmer\_016A through Shimmer\_0052. The main area shows 'AVAILABLE HARDWARE' details and a control panel with three buttons: 'RECOVER' (labeled 3), 'PLAYBACK' (labeled 2), and 'START' (labeled 1). Below these buttons is a 'SPECTRUM ANALYSER' graph and a 'SPECTRUM RESULTS' table. At the bottom, there are buttons for 'RESET', 'CLEAR SD (6/6)', 'FIRMWARE (6/6)', 'CONFIGURE (6/6)', and 'IMPORT (6/6)'. A webcam feed is visible in the bottom left corner.

Rating	Channel	Freq (MHz)
1	25	2475
2	26	2480
3	20	2450
4	19	
5	18	
6	17	
11		

- 1) Click "START" to start a new trial.
- 2) Click 'PLAYBACK' to playback an previously recorded dataset for review and demo purposes
- 3) In case of a software issue, "RECOVER" allows you to recover the last trial (either resume the last session of that trial or start a new session within that trial)\*.

Return to the screen with RECOVER, PLAYBACK & START.

See "Program Firmware".

See "Manage Devices – Part 2".

See "Manage Devices – Part 1 – Configure".

\*Note: The "RECOVER" feature should not be used as part of normal operating procedure and should only be used if the software unexpectedly closed during a trial.

# MANAGE DEVICES – PART 1 – TRIAL NAME

1) Press the 'START' button

2) Enter a custom trial name - as in this example - or use the automatically generated name.

The automatically generated trial name is in the format: "DAYxxHyyMzzS" (e.g., "Fri15h41m52s").

3) Select the input to the group response algorithm. If not using the ECG portion of the NeuroLynQ sensor, then select 'GSR'

4) Click "OK".

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

DEVICES

Span.01 Ch: 25 Mode: Idle

UNPAIRED (6)

016A (Shimmer\_016A) 0 0.0 µs

0169 (Shimmer\_0169) 0 0.0 µs

0160 (Shimmer\_0160) 0 0.0 µs

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Span: 1 Docks/Bases: 1 Shimmers: (6/6)

START Start a new trial

ENTER TRIAL NAME

Enter the trial name to continue (max 12 characters)

Thu14h36m16s

Select source of algorithm

GSR and HRV  GSR

Ok Cancel

SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)

SPECTRUM RESULTS

Rating	Channel	Freq (MHz)
1	25	2475
2	26	2480
3	20	2450
4	19	2445
5	18	2440
6	11	2405

FIRMWARE (6/6) CONFIGURE (6/6) IMPORT (6/6)



# MANAGE DEVICES – PART 1 - PAIRING

The screenshot displays the NeuroLynQ software interface. At the top, there are navigation tabs for 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main area is divided into two sections: 'AVAILABLE DEVICES' and 'AVAILABLE HARDWARE'. The 'AVAILABLE DEVICES' section shows a tree view with 'Span.01' and a list of 'UNPAIRED' shimmers (016A, 0169, 0160). The 'AVAILABLE HARDWARE' section shows a dock with six unpaired shimmers. A spectrum analyzer at the bottom shows power levels across a frequency range, with a table of results on the right.

**AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)**

- Span.01 CH: 25 Mode: Scanning
- UNPAIRED (6)
  - 016A (Shimmer\_016A)
  - 0169 (Shimmer\_0169)
  - 0160 (Shimmer\_0160)

**AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)**

HARDWARE DETAILS: Spans: 1 Docks/Bases: 1 Shimmers: (6/6)

Unpaired Shimmers

**SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)**

**SPECTRUM RESULTS**

Rating	Channel	Freq (MHz)
1	25	2475
2	31	2480
3	30	2450
5	18	2440
6	11	2405

Analysing Spectrum...

RESET CLEAR SD (6/6) FIRMWARE (6/6) CONFIGURE (6/6) IMPORT (6/6)

4) The frequency spectrum is being analysed to determine the optimal channels to use; no user action is required.

NB: Bluetooth and WiFi enabled devices share the same 2.4GHz frequency band as the Shimmers. Interference from such devices can result in a lower packet reception rate for the Shimmers.

# MANAGE DEVICES – PART 1 - PAIRED

The screenshot displays the NeuroLynQ software interface. The top navigation bar includes 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The right side shows a trial status: 'Trial: Fri12h11m03s', 'Config Time: 29th Dec 2017 12:11:04', and 'Session: 1'. The main area is divided into two panels: 'AVAILABLE DEVICES' and 'AVAILABLE HARDWARE'. The 'AVAILABLE DEVICES' panel shows a list of devices under 'Span.01' with columns for device ID, status, and signal strength. The 'AVAILABLE HARDWARE' panel shows a physical device with six green checkmarks indicating successful pairing. The 'SPECTRUM ANALYSER' panel displays a graph of Power (dB) vs. Freq (MHz) with a table of results.

**AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)**

Device	Mode	Signal Strength
016A (Shimmer_016A)	CH: 26 Mode: Streaming	-1.0
0169 (Shimmer_0169)		-1.0
0160 (Shimmer_0160)		-1.0

**AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)**

HARDWARE DETAILS: Spans: 1 Docks/Bases: 1 Shimmers: (6/6)

**SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)**

**SPECTRUM RESULTS**

Rating	Channel	Freq (MHz)
1	26	2480
2	25	2475
3	19	2445
4	14	2420
5	20	2450
6	13	2415

**Annotations:**

- 5) The spectrum is analysed.
- 6) The Spans are automatically configured to the best available channels.
- 7) Subsequently, the software will automatically start to pair Shimmers to Spans. A green tick on the Shimmer indicates a successful pairing
- 8) When a Shimmer has been paired with a Span, it will start streaming automatically.



# MANAGE DEVICES – PART 1 - EXPAND

9) Expand by clicking on the "+" this shows the Shimmers per Span.

10) Right-click on "DEVICES" and click "Show Advanced All" to get more info on the Spans and Shimmers, e.g. the firmware version.

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

ID	Name	Mode	BPM	µs
016A	(Shimmer_016A)	Streaming	-1	-1.0
0169	(Shimmer_0169)		-1	-1.0
0160	(Shimmer_0160)		-1	-1.0
011E	(Shimmer_011E)		-1	-1.0
0053	(Shimmer_0053)		-1	-1.0
0052	(Shimmer_0052)		-1	-1.0

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Spans: 1 Docks/Bases: 1 Shimmers: (6/6)

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

DEVICES

Span.01 CH: 26 Mode: Streaming  
BSL Port: COM138 UART Port: COM139  
HW: SPAN\_SRI\_3\_1 Fw: SPAN.v2.1.0  
Radio CH: 26 ID: 0x0000 Group: 0x30D8  
Trial: Fri12h1m03s Config Time: 2017/12/29 12:11:04 Sampling Rate: 5Hz

016A (Shimmer\_016A) 100% N/A -1 BPM -1.0 µs

Name: Shimmer\_016A Respondent ID:  
State: Idle SD Card: 1.13 MB / 7.39 GB --  
Span: Span.01 MAC: AABCCDD016A SLOT: Base6U.01.06  
Exp: ShimmerGQ.802.15.4 (SR57-1.0) Fw: GQ\_802154.v0.4.0  
Radio CH: 26 ID: 0x0001 Group: 0x30D8  
Trial: Fri12h1m03s Config Time: 2017/12/29 12:11:04 Syncs: 0

SPECTRUM RESULTS

Rating	Channel	Freq (MHz)
1	26	2480
2	25	2475
3	19	2445
4	14	2420
5	20	2450
6	13	2415

# MANAGE DEVICES – PART 1 – RESPONDENT ID

11

12

13

**Add Respondent ID(s)**

Add a text identifier for each Shimmer in this session

BT RADIO ID	SHIMMER NAME	RESPONDENT ID
0053	Shimmer_0053	Thomas
016A	Shimmer_016A	JC
0052	Shimmer_0052	Mark
0160	Shimmer_0160	Sam
0169	Shimmer_0169	Joe
011E	Shimmer_011E	Paul

CANCEL SKIP **DONE**

RESET CLEAR SD (6/6) FIRMWARE (6/6) CONFIGURE (6/6) IMPORT (6/6)

SPECTRUM RESULTS Enabled Disabled

Rating	Channel	Freq (MHz)
1	26	2480
2	25	2475
3	19	2445
4	14	2420
5	20	2450
6	13	2415

- 11) Click the 'Set Respondent ID' button if you want to add a text identifier on the fly for each NeuroLynQ unit. (Optional)
- 12) Add a text identifier for each unit e.g. use the subject's name or initials
- 13) Press the 'DONE' button to apply the respondent ID fields

# LIVE DATA - START

The screenshot displays the NeuroLynQ software interface. At the top, there is a navigation bar with the 'shimmer' logo and four main menu items: 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The 'LIVE DATA' menu item is highlighted with an orange box. Below the navigation bar, a central white panel contains four large tiles. The 'Live Data' tile is highlighted with an orange rounded rectangle. An orange callout box with the text 'Click on the tile to go to Live Data.' has an arrow pointing from the 'LIVE DATA' menu item to the 'Live Data' tile.

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

00:00:00

Click on the tile to go to Live Data.

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions

# LIVE DATA – VIEW 1 – GROUP RESPONSE

The screenshot shows the NeuroLynQ software interface. At the top, there are navigation tabs: 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. An arrow labeled '1' points to the 'ANALYTICS' tab. Below this, there are sections for 'AVAILABLE HARDWARE' and 'VISUALISATION'. A bracket labeled '2' encompasses the hardware list. A gear icon labeled '3' is next to the hardware list. The 'VISUALISATION' section has a dropdown menu labeled 'Group Response' with an arrow pointing to it. Below this, there are two main views: 'INDIVIDUAL RESPONSE' and 'Group Response Instantaneous'. The 'INDIVIDUAL RESPONSE' view shows a list of names: Weibo, Niamh, Martina, Mark, Sam, Ruaidhri, Ruud, and Katy. The 'Group Response Instantaneous' view shows a pie chart with the following data: % High Response (12.5%), % Medium Response (25.0%), and % No Response (62.5%). Below this, there is a 'GROUP RESPONSE' time-series plot showing '% Medium Response' (yellow) and '% High Response' (red) over time. A bracket labeled '4' encompasses the pie chart and the time-series plot. A bracket labeled '5' encompasses the time-series plot. A small inset window shows a video feed of a person.

- 1) There are different views of the live data available. On the right we see the first view – the Plot Metrics
- 2) A list of paired Shimmers with checkboxes for showing or hiding the Shimmers in the visualizations
- 3) Right-click to sort or hide Shimmers or to show the respondent ID instead of the Shimmer name
- 4) View of individual's and group response instantaneously
- 5) View of individual's and group response over time

# LIVE DATA – VIEW 1 – GROUP RESPONSE EXPLAINED

The NeuroLynQ software provides a colour coded output to indicate how subject group is responding to the stimulus



High response – The subject is very engaged with the stimulus



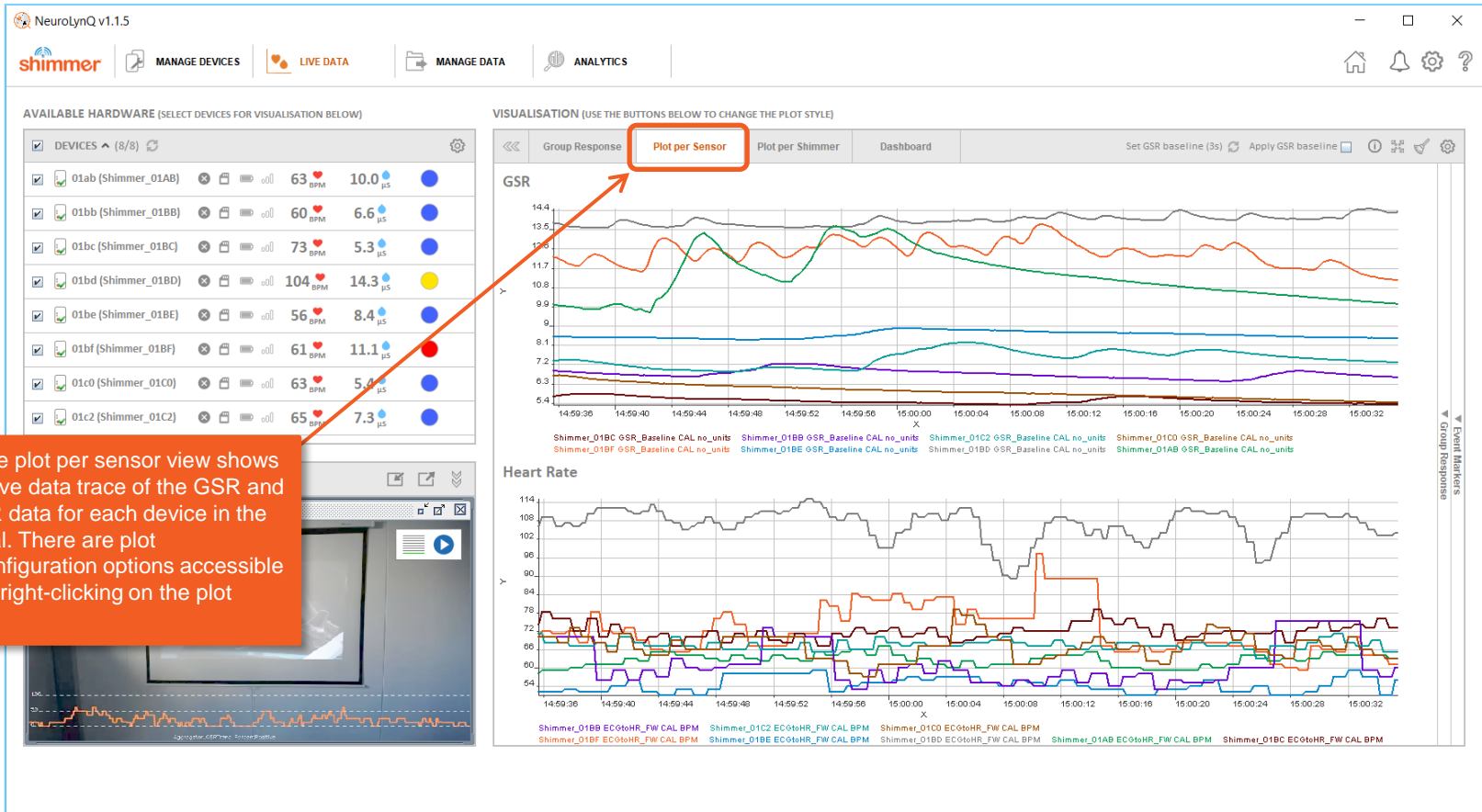
Medium response– The subject is somewhat engaged with the stimulus



No response – The subject is not engaged with the stimulus

**Note:** The source of the algorithm that produces the four level response is by default GSR and HRV (derived from the ECG signal), however the user has the ability to change the source of the algorithm to just GSR, see [Application Settings](#).

# LIVE DATA – VIEW 2 – PLOT PER SENSOR



# LIVE DATA – VIEW 2 – NORMALIZED GSR

## 1. Normalized GSR

- Shows GSR signals normalized to a baseline that can be reset any time at the push of a button
- Reported as the percent deviation from the original baseline
- Provided a quick impression of individual experience



$$\text{GSR normalized} = \frac{\text{GSR} - \text{GSR average over window}}{\text{GSR average over window}} \times 100\%$$



# LIVE DATA – VIEW 3 – PLOT PER SHIMMER

NeuroLynQ v1.1.5

shimmer MANAGE DEVICES LIVE DATA MANAGE DATA ANALYTICS

AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW)

DEVICES (8/8)	BPM	µS
01ab (Shimmer_01AB)	64	13.1
01bb (Shimmer_01BB)	60	6.7
01bc (Shimmer_01BC)	70	5.6
01bd (Shimmer_01BD)	107	13.9
01be (Shimmer_01BE)	51	8.4
01bf (Shimmer_01BF)	66	12.6
01c0 (Shimmer_01C0)	66	6.2
01c2 (Shimmer_01C2)	66	6.9

VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE)

Group Response Plot per Sensor **Plot per Shimmer** Dashboard

Set GSR baseline (3s) Apply GSR baseline

Shimmer\_01AB Shimmer\_01BB Shimmer\_01BC

Shimmer\_01BD Shimmer\_01BE Shimmer\_01BF

Shimmer\_01C0 Shimmer\_01C2

The plot per Shimmer view shows a live data trace of the GSR and HR data for each device in the trial. There are plot configuration options accessible by right-clicking on the plot



# LIVE DATA – VIEW 4 – DASHBOARD

The screenshot displays the NeuroLynQ v1.1.5 software interface. The top navigation bar includes 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main area is divided into 'AVAILABLE HARDWARE' and 'VISUALISATION'. The 'AVAILABLE HARDWARE' section lists 8 devices with their respective HR and GSR values. The 'VISUALISATION' section shows a grid of device status cards, each displaying HR (BPM) and GSR (µS) data. A 'Dashboard' tab is selected in the visualization header. An inset image shows a physical device screen displaying a large number '5' and a waveform. A summary table at the bottom right provides a quick overview of system status.

**AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW)**

Device	HR (BPM)	GSR (µS)
01ab (Shimmer_01AB)	62	8.3
01bb (Shimmer_01BB)	67	7.7
01bc (Shimmer_01BC)	72	5.5
01bd (Shimmer_01BD)	115	14.6
01be (Shimmer_01BE)	77	8.7
01bf (Shimmer_01BF)	73	11.1
01c0	67	5.8
01c2	60	5.7

**VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE)**

Group Response | Plot per Sensor | Plot per Shimmer | **Dashboard**

Set GSR baseline (3s) | Apply GSR baseline

**Summary Table:**

Sync with PC	SD card recording	Battery charge %	Reception rate %
Yes	Yes	75 - 100	80 - 100
No	No	25 - 75	50 - 80
No	No, Error	0 - 25	0 - 50

The dashboard view gives a live status update on the NeuroLynQ unit performance including SD card state, battery charge percentage, data packet reception rate percentage as well as the Shimmer's most recent GSR and HR data packets

# LIVE DATA – RECORDING (1/2)

**N.B.** Undock Shimmers to start streaming GSR and Heart Rate data to the PC.

- 1) “REC” starts/stops recording data streamed to the PC, starts webcam recording (if enabled) and simultaneously to each Shimmer’s on-board SD card.
- 2) A new Session (i.e., a new recording) is added to the Trial each time “REC” is pressed.

**N.B.** The data recorded to the SD cards of the Shimmers needs to be imported after recording has stopped, see “Manage Devices – part2 – import”.

**WARNING!!** Do not switch off Shimmers after undocking otherwise the synchronization and application of Event Markers to this Shimmer’s data will fail.

# LIVE DATA – RECORDING (2/2)

The screenshot displays the NeuroLynQ Shimmer software interface. The top navigation bar includes 'shimmer', 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The 'LIVE DATA' tab is active, showing a table of available hardware devices with columns for device ID, status, syncs, and battery level. A pie chart titled 'Group Response Instantaneous' shows the distribution of response levels: 12.5% High Response (red), 25.0% Medium Response (yellow), and 62.5% No Response (blue). Below the pie chart is a 'GROUP RESPONSE' area with a line graph showing the percentage of medium and high responses over time. The graph shows a fluctuating pattern of yellow and red areas, indicating varying levels of response activity.

**AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW)**

DEVICES (11/11)	STATUS	SYNC	BATT
01ab [Shimmer_01AB]	OK	64	11.4
01bb [Shimmer_01BB]	OK	57	6.6
01bc [Shimmer_01BC]	OK	72	5.4
01bd [Shimmer_01BD]	OK	107	14.2
01be [Shimmer_01BE]	OK	54	8.7
01bf [Shimmer_01BF]	OK	89	13.5
01c0 [Shimmer_01C0]	OK	63	5.8
01c2 [Shimmer_01C2]	OK	67	7.5

**VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE)**

**INDIVIDUAL RESPONSE**

Weibo	Niamh
Martina	Mark
Sam	Ruaidhri
Ruud	Katy

**GROUP RESPONSE**

- % High Response: 12.5%
- % Medium Response: 25.0%
- % No Response: 62.5%

Shimmer is recording data to its SD card.

Minimum syncs received\*; hover over on 'Live Data' tab to see the number of syncs.

A Shimmer that is docked after being undocked shows the last streamed values in the table and plot.

**N.B.** Recording data to the SD card also stops when a Shimmer is docked.

\*Note: the minimum number of syncs must be obtained in order to ensure a valid timestamp output from the Shimmer data. Sync messages are transmitted from the Spans to the Shimmers every 30 seconds.

# LIVE DATA – USING EVENT MARKERS

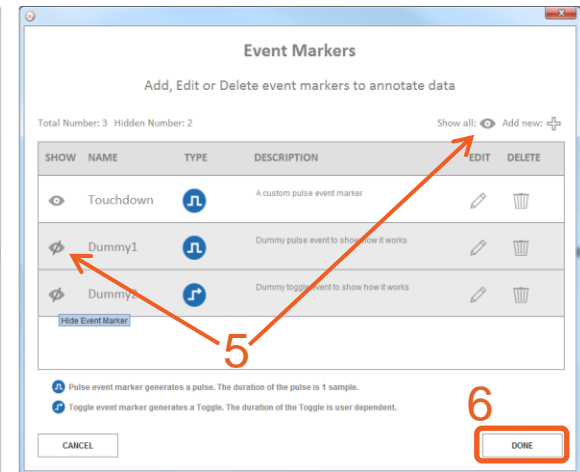
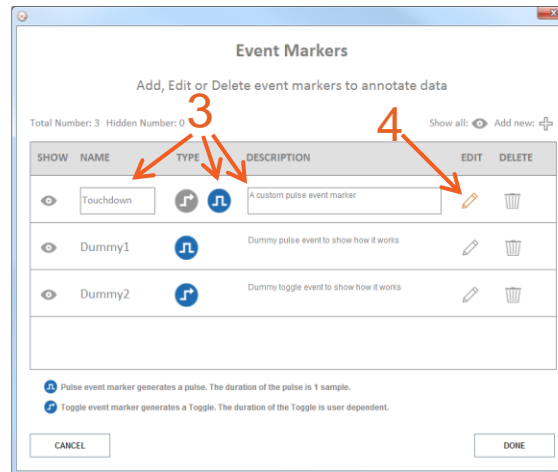
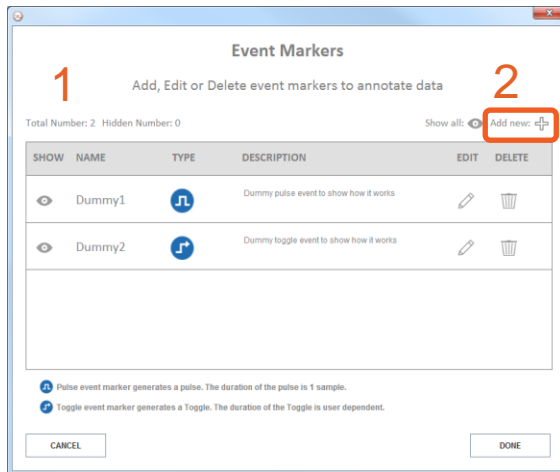
Event markers can be used to annotate incidents that occur during a data recording

The screenshot displays the NeurolynQ software interface. At the top, there are navigation tabs for 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. A red callout box with the text 'Add or Edit event markers' points to the 'LIVE DATA' tab. The main area is divided into several sections:

- AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW):** A list of six Shimmer devices with their respective status icons, BPM values, and other metrics.
- VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE):** A central area with three line graphs: 'GSR', 'Heart Rate', and 'Event'. The 'Event' graph is currently empty. A red callout box with the text 'Clicking the "Event Marker" panel to slide out buttons which can be used to annotate the data' points to the 'Event' graph.
- Event Markers Panel:** A vertical panel on the right side of the 'Event' graph, containing a '+' icon and two buttons: 'Pulse' and 'Toggle'. A red callout box with the text 'Add or Edit event markers' also points to this panel.
- WEBCAM:** A small window in the bottom left corner showing a live video feed of a person in a laboratory setting.

The interface also includes a top status bar with trial information (Fri11h40m53s, Config Time: 29th Dec 2017 11:40:54, Session: 1) and various system icons.

# LIVE DATA – EDITING EVENT MARKERS

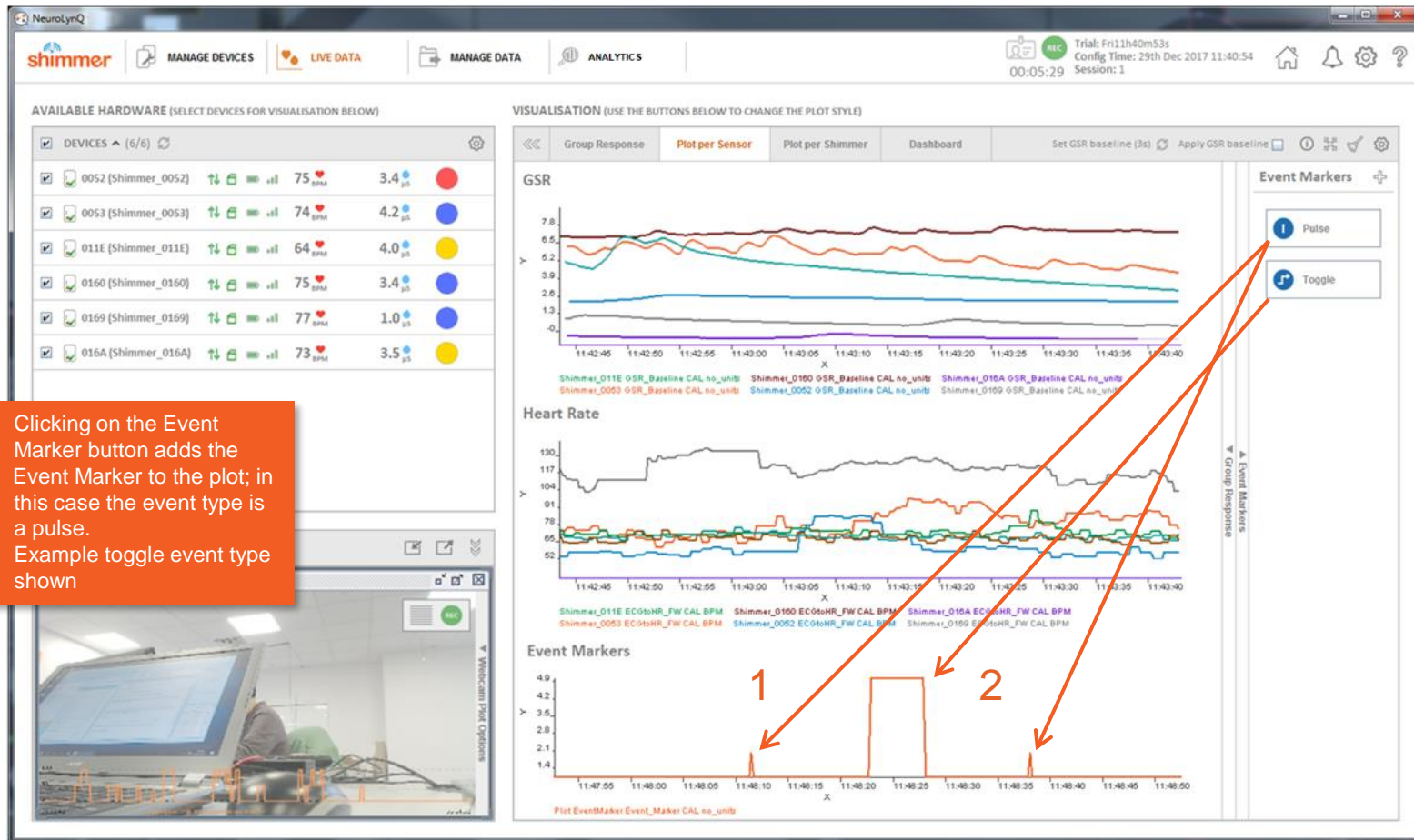


- 1) This screen appears after clicking the Edit/Add Event Markers button.
- 2) Click on the '+' to add new Event Markers.

- 3) Enter "NAME", select "TYPE" and add "DESCRIPTION".
- 4) Click on the highlighted pencil to confirm the new Event Marker.

- 5) Hide individual Event Markers or all Event Markers.
- 6) Click "DONE" when finished editing the Event Markers.

# LIVE DATA – EVENT MARKER IN PLOT



# MANAGE DEVICES – PART 2 - IMPORT

The screenshot shows the NeuroLynQ software interface. At the top, there is a navigation bar with the 'shimmer' logo on the left and four main menu items: 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The 'MANAGE DEVICES' tile is highlighted with an orange border. In the top right corner, there is a status bar showing 'Trial: N/A', 'Config Time: N/A', 'Session: N/A', and a timer at '00:00:00'. Below the navigation bar, there are four large tiles: 'Manage Devices', 'Live Data', 'Manage Data', and 'Analytics'. The 'Manage Devices' tile is also highlighted with an orange border. An orange text box with a white background and an arrow points to the 'MANAGE DEVICES' tile in the navigation bar. The text box contains the following text:

Click on the tile to return to Manage Devices for importing the data recorded on the SD cards of the Shimmers.

The 'Manage Devices' tile contains the following text:

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

The 'Live Data' tile contains the following text:

**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

The 'Manage Data' tile contains the following text:

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

The 'Analytics' tile contains the following text:

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions



# MANAGE DEVICES – PART 2 - IMPORT

The screenshot displays the NeuroLynQ software interface. At the top, there are navigation tabs: **shimmer**, **MANAGE DEVICES**, **LIVE DATA**, **MANAGE DATA**, and **ANALYTICS**. The top right corner shows a recording status: **REC**, **Trial: Fri12h11m03s**, **Config Time: 29th Dec 2017 12:11:04**, **00:00:00**, and **Session: 1**.

The main interface is divided into two primary sections:

- AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE):** This section shows a list of devices under the heading "DEVICES". The first device is "Span.01" in "CH: 26 Mode: Streaming". Below it are three shimmers: "016A (Shimmer\_016A)", "0169 (Shimmer\_0169)", and "0160 (Shimmer\_0160)". Each shimmer entry includes status icons (signal strength, battery, and a red heart) and a "-1.0 µs" value.
- AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE):** This section shows "HARDWARE DETAILS: Spans: 1 Docks/Bases: 1 Shimmers: (6/6)". It features a large image of a Shimmer base station with six shimmers docked, each with a green checkmark. A large orange number "1" is overlaid on the image. Below the image are status indicators: **Paired** (green checkmark), **Docked** (orange dock icon), **Unknown** (red square), and **Pending** (grey square).

At the bottom of the interface, there is a **SPECTRUM ANALYSER** window showing a graph of Power (dB) vs. Freq (MHz) and a **SPECTRUM RESULTS** table. The table lists the following data:

Rating	Channel	Freq (MHz)
1	26	2480
2	25	2475
3	19	2445
4	14	2420
5	20	2450
6	13	2415

At the bottom of the interface, there are several buttons: **RESET**, **CLEAR SD (6/6)**, **FIRMWARE (6/6)**, **CONFIGURE (6/6)**, and **IMPORT (6/6)**. The **IMPORT (6/6)** button is highlighted with an orange border.

An orange callout box on the left side of the interface contains the following instructions:

- 1) When recording is finished, dock the Shimmers with data recorded on their SD cards.
- 2) Click "IMPORT" to start the import process.

2



# MANAGE DEVICES – PART 2 - IMPORT

**Scanning SD Cards..**  
Do not undock or power off Shimmers while this dialog is open!

1 SCANNING SD CARDS 2 IMPORTING SESSIONS

LOCATION	BT RADIO ID	NAME	STATUS	PROGRESS
Base15U.02.10	011F	Shimmer_011F	Success	<div style="width: 100%;"></div>
Base15U.02.11	0107	Shimmer_0107	Success	<div style="width: 100%;"></div>
Base15U.02.12	0123	Shimmer_0123	Success	<div style="width: 100%;"></div>
Base15U.02.13	012F	Shimmer_012F	In Progress	<div style="width: 50%;"></div>
Base15U.02.14	0114	Shimmer_0114	Pending	<div style="width: 0%;"></div>
Base15U.02.15	00E2	Shimmer_00E2	Pending	<div style="width: 0%;"></div>

Status: 50.0% Complete

**Importing sessions..**  
Do not remove or power off the Shimmers while this dialog is open!

1 SCANNING SD CARDS 2 IMPORTING SESSIONS

TRIAL	CONFIGURATION TIME	SESSION ID	SIZE	STATUS	PROGRESS
Thu_09.04.03	2016/04/07 09:04:05	1	2.07 MB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	2	76.66 KB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	3	1.68 MB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	4	249.56 KB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	5	8.03 MB	Importing	<div style="width: 25%;"></div> 00:00:25
Thu_09.04.03	2016/04/07 09:04:05	6	12.09 MB	Completed	<div style="width: 100%;"></div>

Overall Status: 42.0% Complete

**Import Complete**  
Do not remove or power off the Shimmers while this dialog is open!

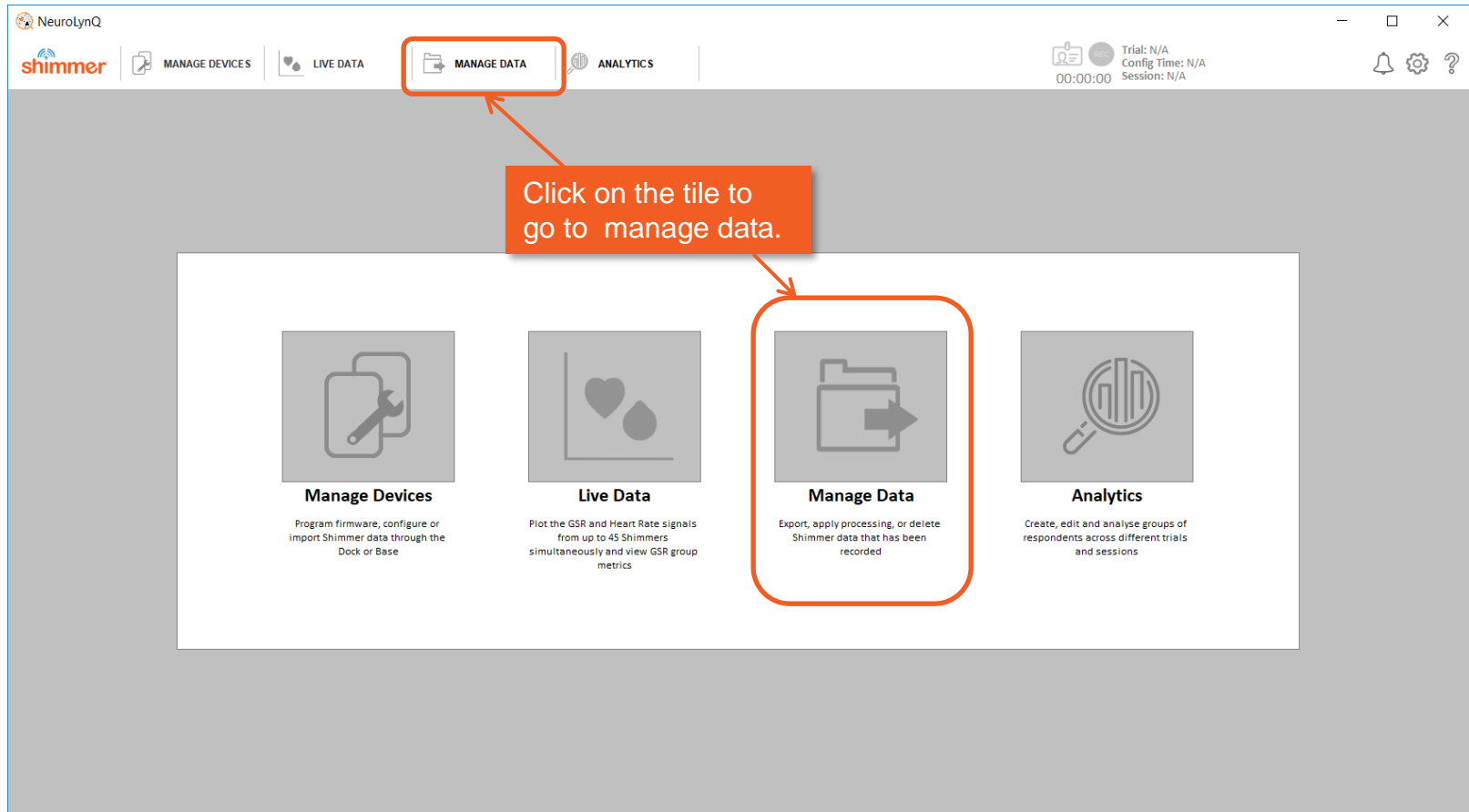
1 SCANNING SD CARDS 2 IMPORTING SESSIONS

TRIAL	CONFIGURATION TIME	SESSION ID	SIZE	STATUS	PROGRESS
Thu_09.04.03	2016/04/07 09:04:05	2	76.66 KB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	3	1.68 MB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	4	249.56 KB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	5	8.03 MB	Imported	<div style="width: 100%;"></div>
Thu_09.04.03	2016/04/07 09:04:05	6	12.09 MB	Imported	<div style="width: 100%;"></div>

Import is Complete!

Click "DONE" when import is complete.

# MANAGE DATA - START



The screenshot shows the NeuroLynQ software interface. At the top, there is a navigation bar with the 'shimmer' logo and four main menu items: 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The 'MANAGE DATA' menu item is highlighted with an orange box. Below the navigation bar, there is a central area with four large tiles: 'Manage Devices', 'Live Data', 'Manage Data', and 'Analytics'. The 'Manage Data' tile is also highlighted with an orange box. An orange text box with the text 'Click on the tile to go to manage data.' has an arrow pointing to the 'Manage Data' tile. The 'Manage Data' tile contains the following text: 'Export, apply processing, or delete Shimmer data that has been recorded'.

NeuroLynQ

shimmer

MANAGE DEVICES

LIVE DATA

MANAGE DATA

ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Click on the tile to go to manage data.

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions

# MANAGE DATA – APPLY EVENT MARKERS

AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)

+	NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
+	SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

No Trial Selected!

Select a trial or a session from the table to view/edit descriptions

1) Apply the Event Markers to the recorded data sets.

# MANAGE DATA - GENERAL

The screenshot shows the NeuroLynQ software interface. At the top, there are navigation tabs for 'MANAGE DEVICES', 'LIVE DATA', and 'MANAGE DATA'. The 'MANAGE DATA' tab is active. On the right side, there is a header area with trial information: 'Trial: Fri12h31m09s', 'Config Time: 29th Dec 2017 12:31:10', and 'Session: 1'. Below this, there are icons for home, notifications, settings, and help.

The main area is divided into two sections: 'AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)' and 'DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)'. The 'AVAILABLE DATA' section contains a table with the following columns: NAME, SYNC, RTC, TIME, DURATION, SIZE, CONFIG, and PLAY. The table lists data for 'SampleNeuroLynQ' and its sub-items: 'SD Recording', 'Session 1', 'Session 2', 'PC Recording', 'Session 1', and 'Session 2'. The 'SYNC' column shows green checkmarks for the 'Session 1' and 'Session 2' rows under 'PC Recording'. An orange callout box with the text 'Enter trial and session descriptions here.' has an arrow pointing to the 'DATA DESCRIPTIONS' section. Another orange callout box with the text 'Synchronisation is successful for this session.' has an arrow pointing to the 'SYNC' column of the 'Session 1' and 'Session 2' rows under 'PC Recording'.

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		
SD Recording							
Session 1			2017/02/08 13:35:55	00:06:20	9.84 MB		
Session 2			2017/02/08 13:58:13				
PC Recording							
Session 1	✓	✓	2017/02/08 13:35:54				
Session 2	✓	✓	2017/02/08 13:58:11				

DELETE

FILTER EXPORT

# MANAGE DATA - PLAYBACK

The screenshot displays the NeuroLynQ software interface. At the top, there is a navigation bar with the Shimmer logo and tabs for MANAGE DEVICES, LIVE DATA, MANAGE DATA (which is active), and ANALYTICS. On the right side of the navigation bar, there is a status area showing 'Trial: N/A', 'Config Time: N/A', and 'Session: N/A' along with a timer at '00:00:00' and icons for home, notifications, settings, and help.

The main content area is divided into two sections. On the left, under the heading 'AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)', there is a table with the following columns: NAME, SYNC, RTC, TIME, DURATION, SIZE, CONFIG, and PLAY. The table contains the following data:

+	NAME	SYNC	RTC	TIME ^	DURATION	SIZE	CONFIG	PLAY
[-]	SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		
[-]	SD Recording							
[-]	PC Recording							
[-]	Session 1 - ~98.7% - 8 Devices	✓		2017/02/08 13:35:54	00:06:21	N/A	⚙️	▶️
[-]	Session 2 - ~98.7% - 8 Devices	✓		2017/02/08 13:58:11	00:03:01	N/A	⚙️	▶️

An orange callout box with a white border and an arrow pointing to the 'PLAY' button of the selected 'Session 2' row contains the text: 'Press the 'PLAY' button on a PC recorded session to play back the dataset and webcam footage as if the data was streaming from the devices in real time'.

On the right side, under the heading 'DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)', there are two description panels. The first panel is titled 'SampleNeuroLynQ - 2017/02/08 13:04:13' and contains the text: 'This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software. Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos; a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subjects GSR and ECG/HR.' The second panel is titled 'PC Recording - Session 2' and contains the text: 'The stimulus video comprised of four TV ads from Superbowl 2017.' followed by a list: '1. Kia', '2. Mr. Clean', '3. Wargaming', '4. KFC'. Below the list, it says: 'Each ad was separated by a countdown timer of five seconds.' At the bottom right of the description area is a 'SAVE' button.

At the bottom of the interface, there are three buttons: 'DELETE' on the left, and 'PROCESS SD', 'FILTER', and 'EXPORT' on the right.

# MANAGE DATA - PLAYBACK

All of the visualisation tools are available when playing back data!

The screenshot displays the NeuroLynQ software interface, which is used for managing and visualizing data. The interface is divided into several sections:

- AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW):** A list of 12 devices with their names, status icons, and response values. For example, 01ab (Weibo) has a response of 10.3  $\mu$ S and a yellow status icon.
- VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE):** A set of tabs for different visualization styles: Group Response, Plot per Sensor, Plot per Shimmer, and Dashboard. The 'Group Response' tab is currently selected.
- Group Response Instantaneous:** A pie chart showing the distribution of response levels: 12.5% High Response (red), 25.0% Medium Response (yellow), and 62.5% No Response (blue).
- GROUP RESPONSE:** A line graph showing the response over time. The x-axis represents time from 14:59:36 to 14:59:32, and the y-axis represents response level from 0 to 96. The graph shows a significant peak in response around 14:59:40.
- WEBCAM: Logitech\_Webcam\_C930e:** A video feed showing a person riding a horse.
- Playback Controls:** A progress bar at the bottom indicates the current time is 00:01:21.050, with a total duration of 00:03:01.044. Playback controls include play, stop, and refresh buttons.

# MANAGE DATA – ADD/EDIT EVENT MARKERS

Add, edit or delete event markers post data collection to segment data

NeuroLynQ

shimmer MANAGE DEVICES LIVE DATA MANAGE DATA ANALYTICS

AVAILABLE HARDWARE (SELECT DEVICES FOR VISUALISATION BELOW)

DEVICES (8/8)

- 01ab (Weibo)
- 01bb (Niamh)
- 01bc (Martina)
- 01bd (Mark)
- 01be (Sam)
- 01bf (Ruaidhrí)
- 01c0 (Ruud)
- 01c2 (Katy)

VISUALISATION (USE THE BUTTONS BELOW TO CHANGE THE PLOT STYLE)

Apply GSR baseline

**Add/Edit/Delete Event Markers**

SampleNeuroLynQ (Session 2)

Add, Edit or Delete event markers to annotate data

Event Markers available for this session

EVENT ID	NAME	DESCRIPTION	TYPE	START TIME	END TIME	DURATION
1	Kia	Kia		00:00:30.539	00:01:30.837	00:01:00.298
2	Mr Clean	Mr Clean ad		00:01:42.192	00:02:06.373	00:00:24.181
4	War Tanks	War Tanks ad		00:02:33.709	00:02:37.283	00:00:03.574
8	KFC	KFC ad		00:02:48.428	00:02:55.787	00:00:07.359

Add Existing Event Marker Add New Event Marker

Shift All Event Marker Times Reset All Event Markers Delete the Selected Event Marker

**1** Pulse event marker generates a pulse. The duration of the pulse is 1 sample.  
**2** Toggle event marker generates a toggle. The duration of the toggle is user dependent.

CANCEL SET TIME LOAD TIME APPLY

**Event Markers**

- Kia
- Mr Clean
- War Tanks
- KFC

Edit Event Markers

WEBCAM: Logitech\_Webcam\_C930e

Logitech\_Webcam\_C930e

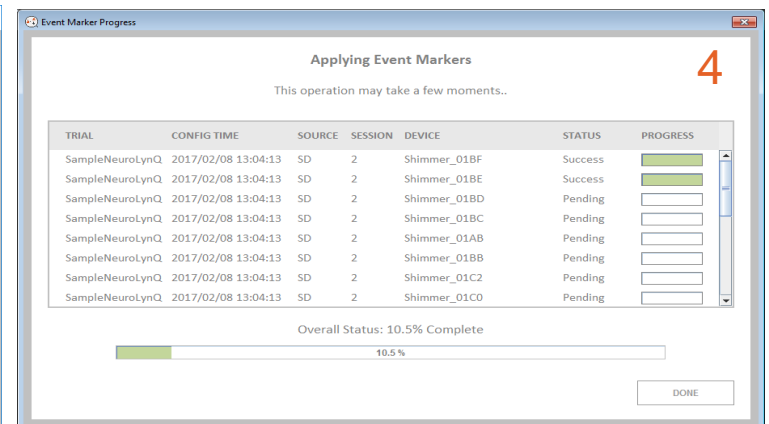
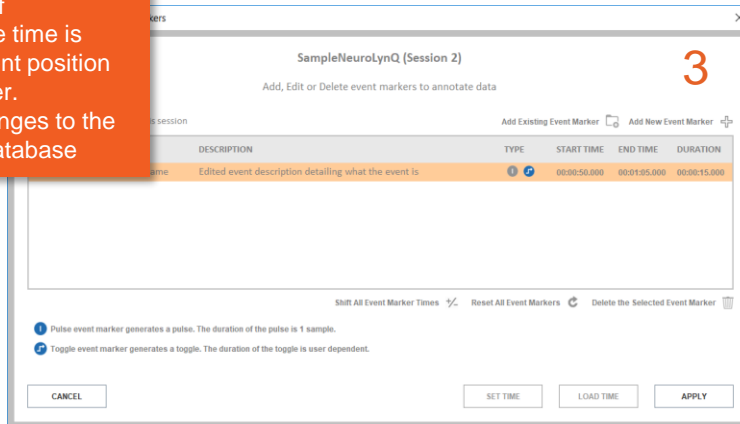
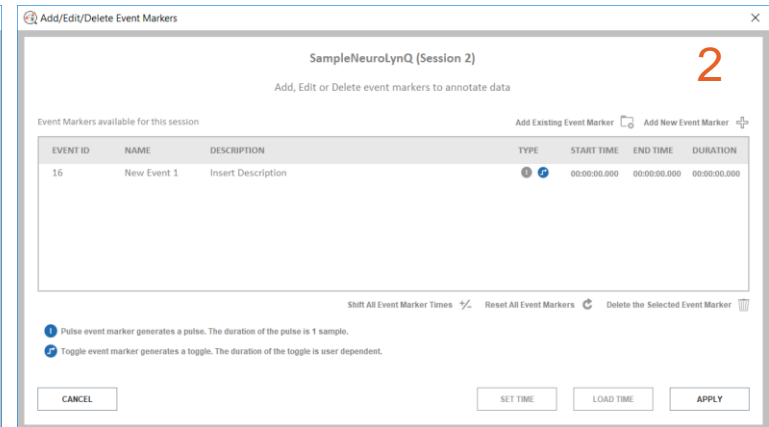
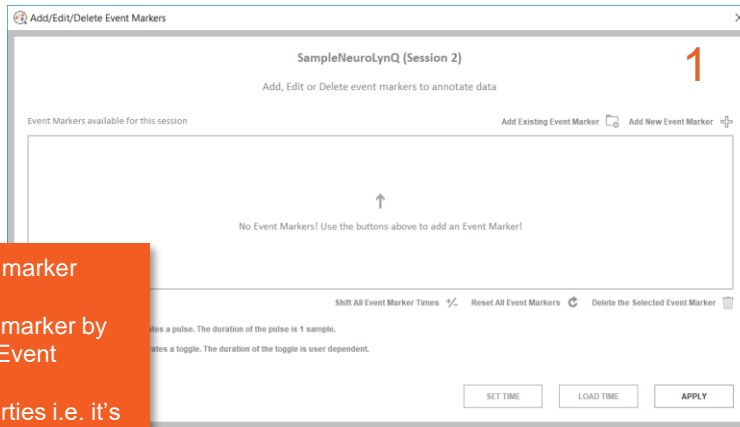
Trial: SampleNeuroLynQ  
Config Time: 8th Feb 2017 14:04:13  
Session: 2

00:00:59.050

00:03:01.044

x1

# MANAGE DATA – ADD/EDIT EVENT MARKERS



- 1) Open the edit event marker dialog
- 2) Create a new event marker by pressing "Add New Event Marker"
- 3) Edit the event properties i.e. it's name, it's description and it's start (and end time if applicable). Note the time is taken from the current position of the playback slider.
- 4) Apply the event changes to the data stored in the database



# MANAGE DATA – LOAD EVENT MARKERS

Right Click on the trial and select the Load Event Marker File option.

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleNeur			2017/02/08 13:04:13	00:18:43	115.93 MB		
SD Record			2017/02/08 13:35:55	00:06:20	9.84 MB		
Session 2 - ~100.0% - 8 Devices			2017/02/08 13:58:13	00:03:00	4.66 MB		
PC Recording			2017/02/08 13:35:54	00:06:21	N/A		
Session 1 - ~98.7% - 8 Devices			2017/02/08 13:58:11	00:03:01	N/A		

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

**SampleNeuroLynQ - 2017/02/08 13:04:13**

This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software.

Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos; a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subjects GSR and ECG/HHR.

**PC Recording - Session 1**

The stimulus video comprised of a Shimmer employee performing a skydive after the Neuromarketing Science and Business Association (NMSBA) in Dubai in 2016.

The subject with unit 01B5 was not wearing the device and hence there is no valid data available for this device.

**PC Recording - Session 2**

The stimulus video comprised of four TV ads from Superbowl 2017.

1. Kia
2. Mr. Clean
3. Wargaming
4. KFC

Each ad was separated by a countdown timer of five seconds:

SAVE

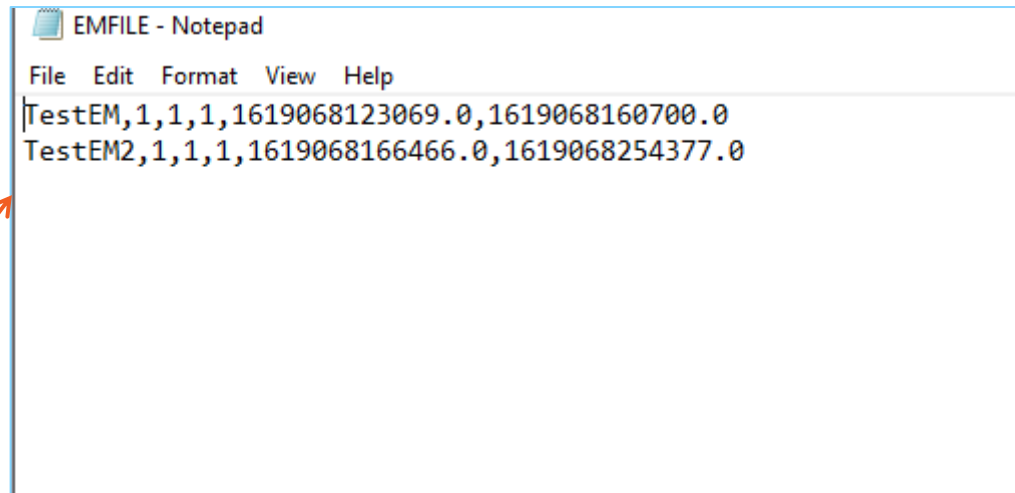
REFRESH PROCESS SD FILTER EXPORT

**Note:** We do not recommend using this function on databases which already have existing Event Markers

# MANAGE DATA – LOAD EVENT MARKERS

Event Marker file should be in the following format Event Name, Event Marker Type, BT Session ID, SD Session ID, Start Time Stamp (unix), Stop Time Stamp (unix)

1. Event Marker Type to be set to 1, to identify it as a Toggle Type Event.
2. The BT and SD session ID for the purpose of NeuroLynQ@Home should be set to 1 respectively.
3. The Start Time Stamp (unix) is the start of the toggle, and the end time stamp the end of the toggle.



```
EMFILE - Notepad
File Edit Format View Help
TestEM,1,1,1,1619068123069.0,1619068160700.0
TestEM2,1,1,1,1619068166466.0,1619068254377.0
```

# MANAGE DATA – EXPORT

**AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)**

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		

**Export Options**

File Path: C:\Users\rmoll\Desktop\2017-02-08\_14.04.13\_SampleNeuroLynQ\_PC\_Session2 **Browse..**

Sensor data file  ⓘ

Export by event marker  Name Description **Set..**

Include video file(s) in export  (1 video file(s) in export)

File Format: .csv File Delimiter: tab (t) Timestamp Format: Unix Data Format: Calibrated File Chunk Size (MB): Disabled

Response data file (.csv)  ⓘ

Add file header text

Insert text here which will form the first line of the csv file.

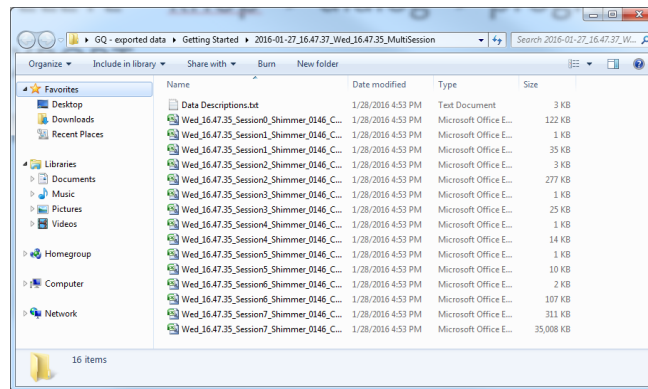
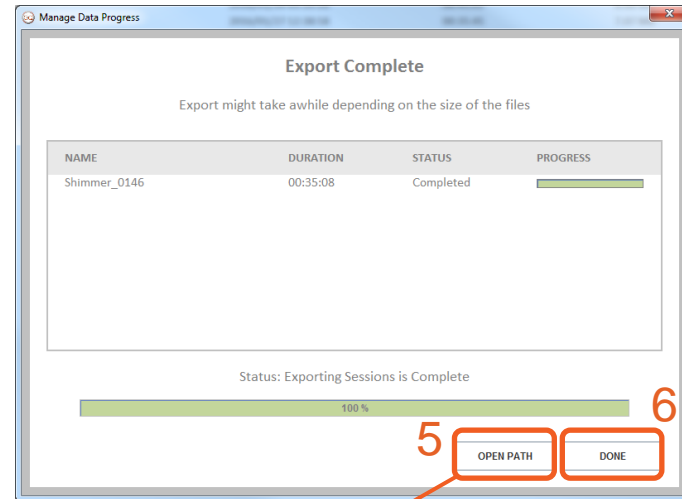
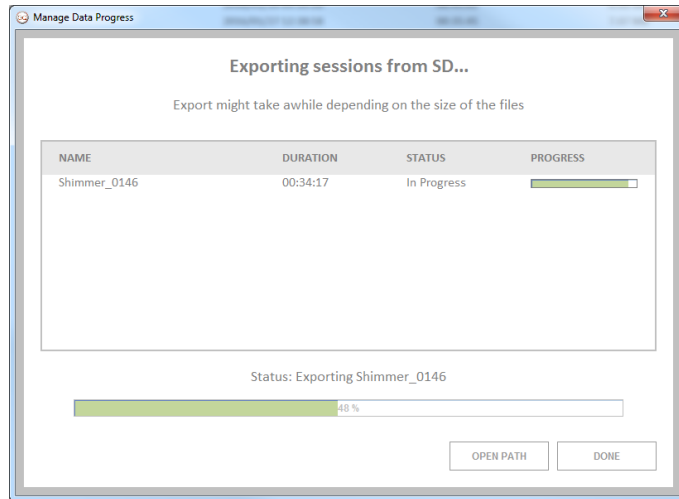
**OK Cancel**

**EXPORT**

To export data from one or more sessions:

- 1) Select data to export.
- 2) Press the EXPORT button.
- 3) Select desired export settings.
- 4) Press 'OK'

# MANAGE DATA - EXPORT



- 5) Click "OPEN PATH" to open the location of the exported data.
- 6) Click "DONE" to close the progress dialog.

# MANAGE DATA – FILTER

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)

+	NAME	SYNC	RTC	TIME ^	DURATION	SIZE	CONFIG	PLAY
+	SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		
+	SD Recording							
+	PC Recording							
+	Session 1 - ≈98.7% - 8 Devices	✓		2017/02/08 13:35:54	00:06:21	N/A	⚙️	▶️
+	Session 2 - ≈98.7% - 8 Devices	✓		2017/02/08 13:58:11	00:03:01	N/A	⚙️	▶️
+	Shimmer_01AB - 5.0Hz - ≈99.2%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BB - 5.0Hz - ≈98.9%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BC - 5.0Hz - ≈98.9%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BD - 5.0Hz - ≈97.3%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BE - 5.0Hz - ≈99.2%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BF - 5.0Hz - ≈98.0%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01C0 - 5.0Hz - ≈99.0%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01C2 - 5.0Hz - ≈98.9%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Aggregator_GSR_Peak_Hold							
+	Aggregator_GSR_Trend							

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

SampleNeuroLynQ - 2017/02/08 13:04:13

This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software.

Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos; a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subjects' GSR and ECG/HR.

PC Recording - Session 2

The stimulus video comprised of four TV ads from Superbowl 2017.

1. Kia
2. Mr. Clean
3. Wargaming
4. KFC

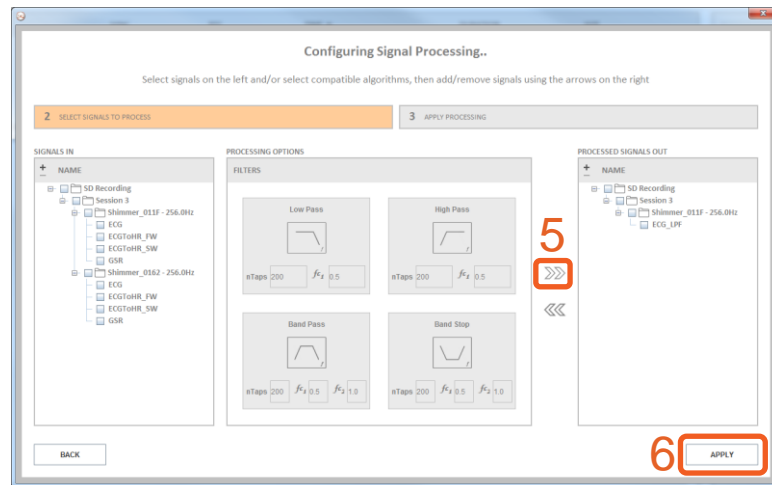
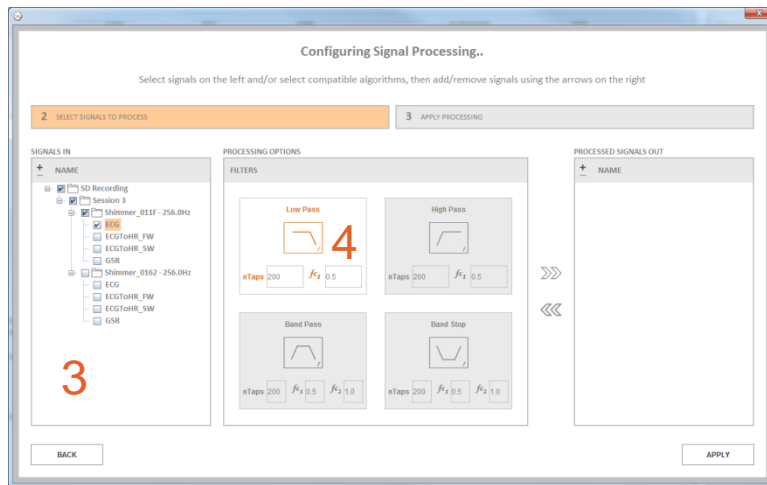
Each ad was separated by a countdown timer of five seconds:

DELETE | PROCESS SD | **FILTER** | EXPORT

In order to apply a filter to recorded signals:  
1) Select data from one or more sessions.  
2) Press the FILTER button.

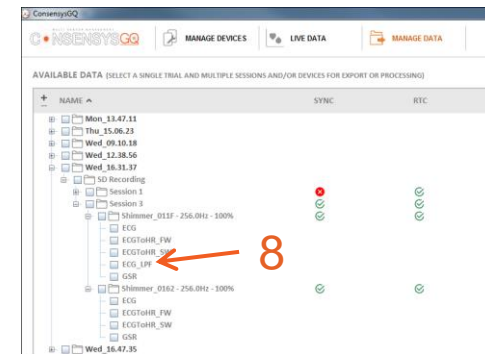
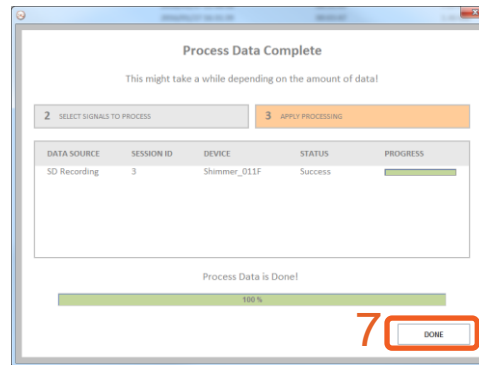
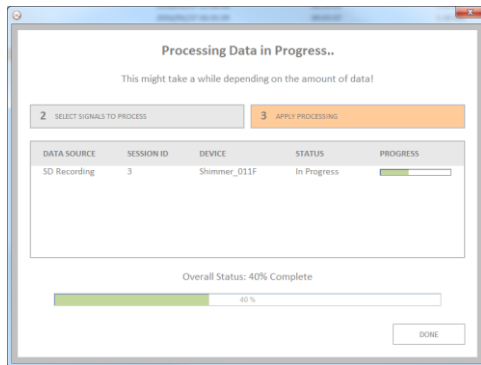
2

# MANAGE DATA - FILTER



- 3) Select the signals to filter.
- 4) Click the tile to select filter type and filter parameters.
- 5) Click the arrows to add a selection of filtered signal(s).
- 6) Press "APPLY" to start applying the filter(s).

# MANAGE DATA - FILTER



- 7) Click "DONE" when processing is complete.
- 8) Filtered signal(s) are added to the MANAGE DATA list.

# MANAGE DATA – DELETE

**AVAILABLE DATA** (SELECT A DATASET FROM THE TABLE BELOW)

+	NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
+	SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	228.48 MB		
+	SD Recording							
+	PC Recording							
+	Session 1 - ~98.7% - 8 Devices	✓		2017/02/08 13:35:54	00:06:21	N/A	⚙️	▶️
+	Session 2 - ~98.7% - 8 Devices	✓		2017/02/08 13:58:11	00:03:01	N/A	⚙️	▶️
+	Shimmer_01AB - 5.0Hz - ~99.2%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BB - 5.0Hz - ~98.9%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BC - 5.0Hz - ~98.9%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BD - 5.0Hz - ~97.3%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BE - 5.0Hz - ~99.2%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01BF - 5.0Hz - ~98.0%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01CO - 5.0Hz - ~99.0%	✓		2017/02/08 13:58:11	00:03:00	N/A		
+	Shimmer_01DO - 5.0Hz - ~98.0%	✓		2017/02/08 13:58:11	00:03:00	N/A		

**DATA DESCRIPTIONS** (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

SampleNeuroLynQ - 2017/02/08 13:04:13

This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software.

Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos: a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subject's GSR and ECG/HR.

PC Recording - Session 2

The stimulus video comprised of four TV sds from Superbowl 2017.

- Kia
- Mr. Clean
- Wargaming
- KFC

Each ad was separated by a countdown timer of five seconds:

**PERMANENTLY DELETE SELECTED DATA?**

You are about to permanently delete the selected data. Are you sure you want to proceed?

Yes No

**Deleting is complete**

Delete might take awhile depending on the size of the files

NAME	DURATION	STATUS	PROGRESS
Thu_10.16.27 - 2016/01/28 10:16:29	00:05:14	Success	100%

Status: Deleting Files is Complete

100%

DONE

PROCESS SD FILTER EXPORT

To delete recorded data, perform the steps below.

Warning: this will permanently delete the selected data from the PC.

- 1) Select data to delete.
- 2) Press the DELETE button.
- 3) Click "Yes" to confirm.
- 4) Click "DONE" when complete.



# MANAGE DATA – PROCESS SD – PART 1

Run the group GSR + HR algorithm on SD recorded data to produce the same form of group response output as obtained when capturing live data as on page [31/32](#)

1) Select one or SD Recording sessions from the same trial

2) Press the PROCESS SD button to perform the aggregation on the selected recordings

3) Press the 'OK' button on the confirmation dialog once you've

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleDataset			2019/01/25 10:46:03	01:10:50	1.81 GB		
SD Recording							
Session 1 - ~99.9% - 30 Devices	✓	✓	2019/01/25 11:42:57	00:35:24	205.98 MB	⚙️	
PC Recording							

Confirm

Are you sure you want to process the SD card data on the trial "SampleDataset"?

These 'SD' sessions will be processed:

- Session 1

OK Cancel

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

Dartmouth - 2019/01/25 10:46:03

Insert Trial Description Here...

PC Recording - Session 1

Insert Session Description Here...

SAVE

DELETE PROCESS SD FILTER EXPORT

**Note:** You can only run the algorithm on SD data that was imported in v2.0.0 or later

# MANAGE DATA – PROCESS SD – PART 2

Run the group GSR + HR algorithm on SD recorded data to produce the same form of group response output as obtained when capturing live data as on page [31/32](#)

6

4

5

4) Be patient as the algorithm is run on the data, this may take awhile depending on the size of the dataset

5) Press the DONE button when the processing has completed

6) Observe the new channels created by the SD card data processing

NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
SampleDataset			2019/01/25 10:46:03	01:10:50	1.81 GB		
SD Recording							
Session 1 - ~99.9% - 30 Devices	✓	✓	2019/01/25 11:42:57	00:35:24	205.98 MB	⚙️	
S11_018D - 256.0Hz - ~99.9%	✓	✓	2019/01/25 11:42:57	00:35:24	6.87 MB		
S12_0175 - 256.0Hz - ~99.9%	✓	✓	2019/01/25 11:42:57	00:35:24	6.87 MB		
S14_018D - 256.0Hz - ~99.9%	✓	✓	2019/01/25 11:42:57	00:35:24	6.87 MB		
S17_018C - 256.0Hz - ~99.9%	✓	✓	2019/01/25 11:42:57	00:35:24	6.87 MB		
S18_0173 - 256.0Hz - ~99.9%	✓	✓	2019/01/25 11:42:57	00:35:24	6.86 MB		
Aggregator_Fusion_Response							
Devices_Total							
Devices_In_Aggregator							
Percentage_Any_Response							
Percentage_High_Response							
Percentage_Medium_Response							
Percentage_No_Response							
Event_Marker							
PC Recording							

TRIAL	CONFIG TIME	SOURCE	SESSION	DEVICE	STATUS	PROGRESS
Dartmouth	2019/01/25 10:46:03	SD	1	Aggregator_Fusion_Response	In Progress	34.0%

TRIAL	CONFIG TIME	SOURCE	SESSION	DEVICE	STATUS	PROGRESS
Dartmouth	2019/01/25 10:46:03	SD	1	Aggregator_Fusion_Response	Success	100.0%

PROCESS SD   FILTER   EXPORT

**Note:** You can only run the algorithm on SD data that was imported in v2.0.0 or later

# MANAGE DATA - REFRESH

NeuroLynQ v3.0.1 - 64bit

shimmer | MANAGE DEVICES | MANAGE DATA | LIVE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)

+	NAME	SYNC	RTC	TIME	DURATION	SIZE	CONFIG	PLAY
<input checked="" type="checkbox"/>	SampleNeuroLynQ			2017/02/08 13:04:13	00:18:43	115.93 MB		
<input checked="" type="checkbox"/>	SD Recording							
<input checked="" type="checkbox"/>	PC Recording							

DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)

SampleNeuroLynQ - 2017/02/08 13:04:13

This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software.

Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos; a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subject's GSR and ECG/HR.

PC Recording - Session 1

The stimulus video comprised of a Shimmer employee performing a skydive after the Neuromarketing Science and Business Association (NMSBA) in Dubai in 2016.

The subject with unit 01B5 was not wearing the device and hence there is no valid data available for this device.

PC Recording - Session 2

The stimulus video comprised of four TV sds from Superbowl 2017.

1. Kia
2. Mr. Clean
3. Wargaming
4. KFC

Each ad was seperated by a countdown timer of five seconds:

DELETE | DOWNLOAD | REFRESH | PROCESS SD | FILTER | EXPORT

After a trial/database has been added or deleted from the Shimmer workspace database directory use the Refresh button to reload what is shown on the user interface

# MANAGE DATA - DOWNLOAD

**AVAILABLE DATA (SELECT A DATASET FROM THE TABLE BELOW)**

+	NAME
<input checked="" type="checkbox"/>	SampleNeuroLynQ
<input checked="" type="checkbox"/>	SD Recording
<input checked="" type="checkbox"/>	PC Recording

**S3 Files Download**

Access Key ID:

Secret Access Key:

Region:

Bucket:

TrialID:

ParticipantID:

Disable Timeout

**DATA DESCRIPTIONS (INSERT DESCRIPTIONS FOR TRIALS/SESSIONS)**

SIZE	CONFIG	PLAY
115.93 MB		

**SampleNeuroLynQ - 2017/02/08 13:04:13**

This is a sample database generated by the Shimmer team to demonstrate the NeuroLynQ hardware and software.

Eight Shimmer employees wore a NeuroLynQ sensor and watched two stimulus videos; a video of someone performing a skydive (Session 1) and a video of four TV ads from Superbowl 2017 (Session 2), while the software recorded the subjects' GSR and ECG/HR.

**PC Recording - Session 1**

The stimulus video comprised of a Shimmer employee performing a skydive after the Neuromarketing Science and Business Association (NMSBA) in Dubai in 2016.

The subject with unit 01B5 was not wearing the device and hence there is no valid data available for this device.

**Session 2**

comprised of four TV ads from Superbowl

2. Mr. Clean  
3. Wargaming  
4. KFC

Each ad was separated by a countdown timer of five seconds:

1. Key in the S3 details – Access key, Secret Key, Region and Bucket.
2. Click “Retrieve Trial Info” button to get list of TrialID s and ParticipantIDs
3. You can either click “Download Trial” or “Download Participant”.
4. Only check the “Disable Timeout” when downloading large files with slow Internet connection.

Click the Download button to download NeuroLynQ@Home trial from S3 server

**Note:** You are not recommended to cancel the ongoing download progress as it will corrupt the files.

# ANALYTICS - START

The screenshot displays the NeuroLynQ software interface. At the top, there is a navigation bar with the 'shimmer' logo on the left and four menu items: 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The 'ANALYTICS' menu item is highlighted with an orange box. In the top right corner, there are system icons for a bell, settings, and help, along with status information: 'Trial: N/A', 'Config Time: N/A', 'Session: N/A', and a timer showing '00:00:00'. Below the navigation bar, a central white panel contains four large tiles. The 'Analytics' tile on the far right is highlighted with an orange rounded rectangle. An orange callout box with the text 'Click on the tile to go to analytics.' has an arrow pointing to the 'Analytics' tile. The other three tiles are 'Manage Devices', 'Live Data', and 'Manage Data', each with an icon and a brief description.

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions

# ANALYTICS – MANAGE STUDIES – ADD STUDY

A study can be defined as a collection of one or more trials each containing one or more sessions that are grouped together in order to perform analysis on the collection

The screenshot shows the 'Manage Studies' interface in NeuroLynQ. On the left, a table lists trials with columns for NAME, TIME, and DURATION. On the right, the 'STUDIES' section is empty. A dialog box titled 'Add a Study' is open, with a green question mark icon. The 'Study Name' field contains 'Sample Study'. The 'Study Description' field contains the text: 'This study is being added as a sample of how to add a study. Users should utilise this study description to add context to the study they are about to add'. At the bottom of the dialog are 'OK' and 'Cancel' buttons. Red arrows and numbers 1, 2, and 3 indicate the steps: 1) Press the '+' icon to add a new study; 2) Enter a name (mandatory) and a description (non-mandatory) for the study; 3) Press the 'OK' button once you're satisfied with the study name and description (note that you can always edit the name and description at a later date if you wish).

NAME	TIME	DURATION
Boston_Site	2018/10/24 08:40:49	00:02:00
Dublin_Site	2018/12/14 13:29:35	00:04:50
Malaysia_Site	2018/12/14 13:47:35	00:08:05
Mexico_Site	2018/12/14 13:57:37	00:06:00
New_York_Site	2019/01/25 10:46:03	01:10:50

STUDIES

Reset All Save All

Study Name  
Sample Study

Study Description  
This study is being added as a sample of how to add a study. Users should utilise this study description to add context to the study they are about to add

OK Cancel

Define Demographics Manage Segments Analyse Segments

# ANALYTICS – MANAGE STUDIES – ADD DATA TO A STUDY

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Manage Studies

Reset All | Save All

**TRIALS**

NAME	TIME	DURATION
Boston_Site	2018/10/24 08:40:49	00:02:00
SD Recording		
Session 1 - ~100.0% - 2 Devices	2018/10/24 08:49:29	00:01:00
PC Recording		
Session 1 - ~99.9% - 1 Device	2018/10/24 08:49:29	00:01:00
Dublin_Site	2018/12/14 13:29:35	00:04:50
PC Recording		
Session 1 - ~99.8% - 10 Devices	2018/12/14 13:30:21	00:03:20
Session 2 - ~99.9% - 10 Devices	2018/12/14 13:33:47	00:01:30
Malaysia_Site	2018/12/14 13:47:35	00:08:05
PC Recording		
Session 1 - ~100.0% - 3 Devices	2018/12/14 13:48:16	00:01:59
Session 2 - ~100.0% - 1 Device	2018/12/14 13:50:20	00:02:00
Session 3 - ~100.0% - 3 Devices	2018/12/14 13:52:23	00:02:05
Session 4 - ~99.9% - 3 Devices	2018/12/14 13:54:32	00:02:00
Mexico_Site	2018/12/14 13:57:37	00:06:00
PC Recording		
Session 3 - ~100.0% - 1 Device	2018/12/14 14:03:31	00:02:00
Session 4 - ~100.0% - 1 Device	2018/12/14 14:05:34	00:02:00
Session 5 - ~100.0% - 1 Device	2018/12/14 14:07:37	00:02:00
New_York_Site	2019/01/25 10:46:03	01:10:50
SD Recording		
Session 1 - ~99.9% - 30 Devices	2019/01/25 11:42:57	00:35:24
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

**STUDIES**

NAME	TIME	DURATION
Sample Study		
New_York_Site	2019/01/25 10:46:03	01:10:50
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

1) Select one or more sessions from one or more trials from your recorded NeuroLynQ datasets that you wish to add to your study.

2) Press the 'Add to Study' button

3) Observe that your study now contains the datasets selected in 1)

Define Demographics | Manage Segments | Analyse Segments

# ANALYTICS – MANAGE STUDIES – OTHER OPS

There are a number of other useful operations you can perform on a study

NeurolynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

00:00:00

Reset All | Save All

Manage Studies

**TRIALS**

NAME	TIME	DURATION
Boston_Site	2018/10/24 08:40:49	00:02:00
SD Recording		
Session 1 - ~100.0% - 2 Devices	2018/10/24 08:49:29	00:01:00
PC Recording		
Session 1 - ~99.9% - 1 Device	2018/10/24 08:49:29	00:01:00
Dublin_Site	2018/12/14 13:29:35	00:04:50
PC Recording		
Session 1 - ~99.8% - 10 Devices	2018/12/14 13:30:21	00:03:20
Session 2 - ~99.9% - 10 Devices	2018/12/14 13:33:47	00:01:30
Malaysia_Site	2018/12/14 13:47:35	00:08:05
PC Recording		
Session 1 - ~100.0% - 3 Devices	2018/12/14 13:48:16	00:01:59
Session 2 - ~100.0% - 1 Device	2018/12/14 13:50:20	00:02:00
Session 3 - ~100.0% - 3 Devices	2018/12/14 13:52:23	00:02:05
Session 4 - ~99.9% - 3 Devices	2018/12/14 13:54:32	00:02:00
Mexico_Site	2018/12/14 13:57:37	00:06:00
PC Recording		
Session 3 - ~100.0% - 1 Device	2018/12/14 14:03:31	00:02:00
Session 4 - ~100.0% - 1 Device	2018/12/14 14:05:34	00:02:00
Session 5 - ~100.0% - 1 Device	2018/12/14 14:07:37	00:02:00
New_York_Site	2019/01/25 10:46:03	01:10:50
SD Recording		
Session 1 - ~99.9% - 30 Devices	2019/01/25 11:42:57	00:35:24
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

**STUDIES**

NAME	TIME	DURATION
Sample Study		
New_York_Site	2019/01/25 10:46:03	01:10:50
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

1) Remove From Study

2) Add To Study

3) Edit

4) Reset All

5) Save All

Define Demographics | Manage Segments | Analyse Segments

- 1) Remove contents from a study by selecting one or more sessions from one or more trials and press the 'Remove From Study' button
- 2) Delete a study (note that it will only be permanently deleted when you perform a save, you can recover a deleted study if it hasn't been saved using 4)
- 3) Edit a study's name and/or description
- 4) Reset all studies to their last saved state
- 5) Save all studies



# ANALYTICS – MANAGE STUDIES – SELECT STUDY

When you're satisfied with your study (or studies), you can select a single study to proceed through the analytics module, there are number of avenues available.

NeurolynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Manage Studies

Reset All | Save All

**TRIALS**

NAME	TIME	DURATION
Boston_Site	2018/10/24 08:40:49	00:02:00
SD Recording		
Session 1 - ~100.0% - 2 Devices	2018/10/24 08:49:29	00:01:00
PC Recording		
Session 1 - ~99.9% - 1 Device	2018/10/24 08:49:29	00:01:00
Dublin_Site	2018/12/14 13:29:35	00:04:50
PC Recording		
Session 1 - ~99.8% - 10 Devices	2018/12/14 13:30:21	00:03:20
Session 2 - ~99.9% - 10 Devices	2018/12/14 13:33:47	00:01:30
Malaysia_Site	2018/12/14 13:47:35	00:08:05
PC Recording		
Session 1 - ~100.0% - 3 Devices	2018/12/14 13:48:16	00:01:59
Session 2 - ~100.0% - 1 Device	2018/12/14 13:50:20	00:02:00
Session 3 - ~100.0% - 3 Devices	2018/12/14 13:52:23	00:02:05
Session 4 - ~99.9% - 3 Devices	2018/12/14 13:54:32	00:02:00
Mexico_Site	2018/12/14 13:57:37	00:06:00
PC Recording		
Session 3 - ~100.0% - 1 Device	2018/12/14 14:03:31	00:02:00
Session 4 - ~100.0% - 1 Device	2018/12/14 14:05:34	00:02:00
Session 5 - ~100.0% - 1 Device	2018/12/14 14:07:37	00:02:00
New_York_Site	2019/01/25 10:46:03	01:10:50
SD Recording		
Session 1 - ~99.9% - 30 Devices	2019/01/25 11:42:57	00:35:24
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

**STUDIES**

NAME	TIME	DURATION
Another Study		
One More Study		
Sample Study		
New_York_Site	2019/01/25 10:46:03	01:10:50
PC Recording		
Session 1 - ~87.7% - 30 Devices	2019/01/25 11:42:56	00:35:25

1

2

Add To Study

Remove From Study

Define Demographics | Manage Segments | Analyse Segments

- 1) Select a single study to proceed to the next stage of the analytics module
- 2) There are three routes to take
  - i. Define Demographics
  - ii. Manage Segments
  - iii. Analyse SegmentsEach of these routes are discussed in subsequent pages of this document

# ANALYTICS – DEFINE DEMOGRAPHICS – CREATE DEMOGRAPHIC

Demographics can be used (not mandatory) to add context to each participant e.g. if they're male or female, if they are over 30 years old or under 30 years old etc.

**STUDY**

NAME	TIME	DURATION
New_York_Site	2019/01/25 17:46:03	00:35:25
PC Recording		
Session 1 - #87.2% - 30 Devices	2019/01/25 18:42:56	00:35:25

**DEFINE DEMOGRAPHICS**

SENSOR NAME	RESPONDENT ID
S18_0173	Paul
S12_0175	Peter

**Add a Demographic**

Add name (e.g. Gender)  
Gender

Add Value (e.g. Male/Female)  
Female

Male

Male  
Female

Ok Cancel

S42\_018E Helen  
S21\_018F Nicole  
S63\_0197 Jason  
S59\_019B John

1) Press the + icon to create a new demographic or copy an existing demographic from another study (for the purpose of this guide we'll just to 'Create New'

2) Enter a name for the demographic e.g. 'Gender'

3) Enter a value for the demographic e.g. 'Female' and press the + button so that the value appears in the drop-down menu

4) Should you make a mistake with a demographic value you can remove it by pressing t the - button

5) Press the 'OK' button once you're happy with the demographic name and values

# ANALYTICS – DEFINE DEMOGRAPHICS – ASSIGN DEMOGRAPHIC VALUES TO RESPONDENTS

NeuroLynQ v1.1.5

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

00:00:00

Manage Studies (Sample Study) > Define Demographics

Reset All | Save All

STUDY		
NAME	TIME	DURATION
New_York_Site	2019/01/25 17:46:03	00:35:25
PC Recording	2019/01/25 18:42:56	00:35:25
Session 1 - 87.2% - 30 Devices		

DEFINE DEMOGRAPHICS		
SENSOR NAME	RESPONDENT ID	GENDER
S18_0173	Paul	
S12_0175	Peter	Female Male
S36_0276	Sandra	Female
S50_0178	Adam	Male
S38_017A	Beatrice	Female
S47_0181	Caroline	Female
S40_0185	Sam	Male
S25_0188	Simon	Male
S54_0189	Derek	Male
S51_018B	Geoff	Male
S11_018D	Joseph	Male
S42_018E	Helen	Female
S21_018F	Nicole	Female
S63_0197	Jason	Male
S59_019B	John	Male

1) Select a single session that you wish to assign the demographic values to. Note that this study only contains a single trial with a single session but it's quite likely your study may have multiple sessions so what's important to remember here is you can only assign demographic values one session at a time.

2) Select the drop-down menu for each respondent and set the appropriate demographic value. Continue until you have populated your required demographics all respondents in all sessions in this study.

3) You can also edit the respondent ID i.e. a text tag that can be used associate a NeuroLynQ sensor with a person.

Manage Segments

# ANALYTICS – DEFINE DEMOGRAPHICS – OTHER OPS

There are a number of other useful operations you can perform on the demographics

SENSOR NAME	RESPONDENT ID	GENDER
S18_0173	Paul	Male
S12_0175	Peter	Male
S36_0176	Sandra	Female
S50_0178	Adam	Male
S38_017A	Beatrice	Female
S47_0181	Caroline	Female
S40_0185	Sam	Male
S25_0188	Simon	Male
S54_0189	Derek	Male
S51_018B	Geoff	Male
S11_018D	Joseph	Male
S42_018E	Helen	Female
S21_018F	Nicole	Female
S63_0197	Jason	Male
S59_019B	John	Male

- 1) Delete a demographic (note that it will only be permanently deleted when you perform a save, you can recover a deleted demographic if it hasn't been saved using 3)
- 2) Edit a demographics' name (e.g. Gender) and/or values (e.g. Male/Female)
- 3) Reset all demographics to their last saved state
- 4) Save all demographics

# ANALYTICS – DEFINE DEMOGRAPHICS – EXAMPLE SHOWING MORE DEMOGRAPHICS

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

00:00:00 Trial: N/A Config Time: N/A Session: N/A

Manage Studies (Sample Study) > Define Demographics

Reset All Save All

STUDY	NAME	TIME	DURATION
	New_York_Site	2019/01/25 17:46:03	00:35:25
	PC Recording		
	Session 1 - =87.2% - 30 Devices	2019/01/25 18:42:56	00:35:25

DEFINE DEMOGRAPHICS	SENSOR NAME	RESPONDENT ID	GENDER	AGE	POLITICAL LEANING
	S18_0173	Paul	Male	Over 25	Left
	S12_0175	Peter	Male	Over 25	Left
	S36_0176	Sandra	Female	Under 25	Right
	S50_0178	Adam	Male	Over 25	Right
	S38_017A	Beatrice	Female	Over 25	Right
	S47_0181	Caroline	Female	Under 25	Left
	S40_0185	Sam	Male	Under 25	Left
	S25_0188	Simon	Male	Over 25	Right
	S54_0189	Derek	Male	Over 25	Right
	S51_018B	Geoff	Male	Under 25	Right
	S11_018D	Joseph	Male	Over 25	Left
	S42_018E	Helen	Female	Under 25	Right
	S21_018F	Nicole	Female	Under 25	Left
	S63_0197	Jason	Male	Over 25	Right
	S59_019B	John	Male	Over 25	Right

1

2

Manage Segments

- 1) You can proceed to add as many demographics as you wish (note that it's not mandatory to add demographics to the study)
- 2) Once your satisfied with the demographics, you can proceed to the 'Manage Segments' part of the analytics module.

# ANALYTICS – MANAGE SEGMENTS – ADD SEGMENT

A segment can be defined as a group of one or more respondents in a study. Users can add/edit/delete as many segments as they wish.

1) Press the + icon to add a new segment

2) Enter a name (mandatory) and a description (non-mandatory) for the segment

3) Press the 'OK' button once you're satisfied with the segment name and description (note that you can always edit the name and description at a later date if you wish)

NAME	TIME	DURATION
New_York_Site	2019/01/25 17:46:03	00:35:25
PC Recording		
Session 1 - ~87.2% - 30 Devices	2019/01/25 18:42:56	00:35:25

# ANALYTICS – MANAGE SEGMENTS – ADD RESPONDENTS TO A SEGMENT

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

Manage Studies (Sample Study) > Define Demographics > Manage Segments

Reset All | Save All

**SEGMENTS**

NAME	TIME	DURATION
Sample Segment (14)		

**DEMOGRAPHICS**

- Age
  - Over 25
  - Under 25
- Gender
  - Female
  - Male
- Political Leaning
  - Left
  - Right

**SELECT RESPONDENTS (14 selected)**

NAME	TIME	DURATION
<input checked="" type="checkbox"/> New_York_Site	2019/01/25 17:46:03	00:35:25
<input checked="" type="checkbox"/> Recording		
<input checked="" type="checkbox"/> Session 1 --88.5% - 14 Devices	2019/01/25 18:42:56	00:35:25
<input checked="" type="checkbox"/> Beatrice		
<input checked="" type="checkbox"/> Caroline		
<input checked="" type="checkbox"/> Catherine		
<input checked="" type="checkbox"/> Helen		
<input checked="" type="checkbox"/> Isabelle		
<input checked="" type="checkbox"/> Katy		
<input checked="" type="checkbox"/> Linda		
<input checked="" type="checkbox"/> Loraine		
<input checked="" type="checkbox"/> Natalie		
<input checked="" type="checkbox"/> Nicole		
<input checked="" type="checkbox"/> Rebecca		
<input checked="" type="checkbox"/> Ruth		
<input checked="" type="checkbox"/> Sandra		
<input checked="" type="checkbox"/> Zoe		

DESCRIPTION

This segment is being added as an example of how to add a segment. Users should utilise this study description to add context to the segment they are about to add.

Analyse Segments

- 1) Select the desired segment from the table to add respondents to (note that this example only shows one segment in the table however it's likely a real study you'll have multiple segments)
- 2) Filter the respondents by selecting one or more demographics e.g. if you wish to view the respondents who are female, select 'Female'
- 3) Add respondents to the select segment by selecting individual respondent checkboxes or the master respondent checkbox to select and all visible respondents to the segment
- 4) Observe the number of respondents in the selected segment

# ANALYTICS – MANAGE SEGMENTS – OTHER OPS

There are a number of other useful operations you can perform on the segments

The screenshot shows the NeuroLynQ 'Manage Segments' interface. It features a top navigation bar with 'shimmer' and 'NeuroLynQ' logos, and tabs for 'MANAGE DEVICES', 'LIVE DATA', 'MANAGE DATA', and 'ANALYTICS'. The main content area is divided into three panels: 'SEGMENTS' on the left, 'DEMOGRAPHICS' in the middle, and 'SELECT RESPONDENTS (14 selected)' on the right. The 'SEGMENTS' panel shows a 'Sample Segment (14)' with a trash icon (1) and an edit icon (2). The 'DEMOGRAPHICS' panel shows a tree view of demographic filters like 'Age' and 'Gender'. The 'SELECT RESPONDENTS' panel shows a list of individual respondents with checkboxes, including 'New\_York\_Site' and 'PC Recording'. In the top right corner, there are icons for 'Reset All' (3) and 'Save All' (4). A 'DESCRIPTION' field is visible at the bottom left of the 'SEGMENTS' panel, containing a placeholder text. An 'Analyse Segments' button is located at the bottom right of the interface.

- 1) Delete a segment (note that it will only be permanently deleted when you perform a save, you can recover a deleted segment if it hasn't been saved using 3)
- 2) Edit a segment's name and/or description
- 3) Reset all segment to their last saved state
- 4) Save all segments



# ANALYTICS – MANAGE SEGMENTS – EXAMPLE SHOWING MORE SEGMENTS

NeuroLynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

Manage Studies (Sample Study) > Define Demographics > Manage Segments

Reset All | Save All

SEGMENTS	DEMOGRAPHICS	SELECT RESPONDENTS (11 selected)
All Females (14)	Age	New_York_Site
All Males (16)	Over 25	PC Recording
All Respondents (30)	Under 25	Session 1 - ~86.5% - 11 Devices
Females over 25 (14)	Gender	Adam
Females under 25 (9)	Female	Derek
<b>Males over 25 (11)</b>	Male	Jack
Males under 25 (5)	Political Leaning	Jason
Political Left (15)	Left	Jimmy
Political Right (15)	Right	John
Sample Segment (14)		Joseph
DESCRIPTION		Paul
This segment contains all male respondents who are over the age of 25 years.		Peter
		Simon
		Thomas

1) You can proceed to add as many segments as you wish.

2) Once your satisfied with the segments, you can proceed to the 'Analyse Segments' part of the analytics module.

2 Analyse Segments

# ANALYTICS – ANALYSE SEGMENTS - PROCESSING

A study can be defined as a collection of one or more trials each containing one or more sessions that are grouped together in order to perform analysis on the collection

1) Select one or more segments that you wish to process

2) Select one or more event markers that you wish to process the segment over.

3) Select a single algorithm to run on your segment and event marker combinations

4) Select the window over which you want to produce results for

5) Press the 'Process Segment' button to run the selected algorithm

6) View the output of the processing in the 'RESULTS' table and on the plot (selecting a checkbox) in the 'RESULTS' table adds a signal to the plot

# ANALYTICS – ANALYSE SEGMENTS – EXPORT PART 1

NeurolynQ

shimmer MANAGE DEVICES LIVE DATA MANAGE DATA ANALYTICS

00:00:00 Trial: N/A Config Time: N/A Session: N/A

Manage Studies (Sample Study) > Manage Segments > Analyse Segments

**SELECT SEGMENT(S)**

- All Females
- All Males
- All Respondents
- Females over 25
- Females under 25
- Males over 25
- Males under 25
- Political Left
- Political Right
- Sample Segment

**SELECT EVENT MARKER(S)**

- Anthony Leis (Toggle)
- Bernie Neg (Toggle)
- Bernie Pos (Toggle)
- China Env (Toggle)
- Cleanup.com (Toggle)
- Donald Neg (Toggle)
- Donald Pos (Toggle)
- EcoMarine Oc (Toggle)
- fightglobalw (Toggle)
- Greenpeace 2 (Toggle)
- Hillary Neg (Toggle)
- Hillary Pos (Toggle)
- Jay Instea (Toggle)
- Kamala Harri (Toggle)
- Liz Warren (Toggle)
- NWPCA (Toggle)
- Pallet Centr (Toggle)
- Wildlands Wo (Toggle)
- WWF (Toggle)
- Zane Greenpe (Toggle)

**SELECT ALGORITHM**

- Group Response

**Select Metrics**

- Any Response
- High Response
- Medium Response
- No Response
- GSR Peak Count

**RESULTS**

NAME	AVG	MAX
Anthony Leis		
All Females		
% Any Response	30.93	84.62
% High Response	5.89	46.15
All Males		
% Any Response	25.48	71.43
% High Response	6.89	37.50
All Respondents		
% Any Response	30.12	63.16
% High Response	6.42	34.48
All Females		
% Any Response	20.00	28.57
% High Response	2.31	10.00
All Males		
% Any Response	41.85	53.33
% High Response	6.91	13.33
All Respondents		
% Any Response	31.38	41.38
% High Response	4.78	10.34

**Export Options**

File Path: C:\Users\rmoll\Documents\Sample\_Study\_2019-04-26\_14.31.20

File Types:  Window metrics (avg and max value)  Data traces

Results to Output:  All available data  Only selected data

**PLOT**

Group Response (%)

Anthony Leis\_All Females Percentage\_Any\_Response CAL %

**1**

- 1) Press the 'EXPORT' button
- 2) Configure the export settings as you wish
- 3) Press the 'Ok' button once you're satisfied with the export configuration

# ANALYTICS – ANALYSE SEGMENTS – EXPORT PART 2

Two different file types can be exported 1) Window metric file 2) Data trace file

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Event Marker	All Female	All Female	All Female	All Female	All Males	All Males	All Males	All Males	All Respon	All Respon	All Respon	All Respondents_%	High Response	Maximum		
2	Anthony Leis	30.93	84.62	5.89	46.15	29.48	71.43	6.89	37.5	30.12	63.16	6.42	34.48				
3	Bernie Neg	22.84	42.86	3.55	15.38	25.22	33.33	2.1	11.11	24.07	37.93	2.8	11.54				
4	Bernie Pos	20	28.57	2.31	10	41.85	53.33	6.91	13.33	31.38	41.38	4.78	10.34				

	A	B	C	D	E	F	G	H	I
1	System_Ti	All Female	All Female	All Males	All Males	All Respon	All Respondents	High_Response	
2	ms	%	%	%	%	%	%	%	
3	0	84.62	38.46	43.75	31.25	62.07	34.48		
4	400	84.62	38.46	43.75	25	62.07	31.03		
5	800	84.62	38.46	43.75	18.75	62.07	27.59		
6	1200	84.62	38.46	31.25	12.5	55.17	24.14		
7	1600	69.23	38.46	31.25	0	48.28	17.24		
8	2000	69.23	46.15	18.75	0	41.38	20.69		
9	2400	61.54	30.77	25	0	41.38	13.79		
10	2800	61.54	30.77	37.5	12.5	48.28	20.69		
11	3200	61.54	23.08	31.25	12.5	44.83	17.24		
12	3600	53.85	15.38	37.5	12.5	44.83	13.79		
13	4000	61.54	23.08	25	6.25	41.38	13.79		
14	4400	61.54	23.08	25	12.5	41.38	17.24		
15	4800	61.54	15.38	25	12.5	41.38	13.79		
16	5200	69.23	15.38	31.25	12.5	48.28	13.79		

	A	B	C	D	E	F	G	H	I
1	System_Ti	All Female	All Female	All Males	All Males	All Respon	All Respondents	High_Response	
2	ms	%	%	%	%	%	%	%	
3	0	28.57	0	25	6.25	26.67	3.33		
4	400	28.57	0	18.75	0	23.33	0		
5	800	28.57	0	18.75	0	23.33	0		
6	1200	21.43	0	18.75	0	20	0		
7	1600	21.43	0	18.75	0	20	0		
8	2000	14.29	0	18.75	0	16.67	0		
9	2400	21.43	7.14	25	0	23.33	3.33		
10	2800	21.43	7.14	25	0	23.33	3.33		
11	3200	14.29	7.14	26.67	0	20.69	3.45		
12	3600	14.29	7.14	20	0	17.24	3.45		
13	4000	14.29	0	20	0	17.24	0		
14	4400	14.29	0	20	0	17.24	0		
15	4800	7.14	0	13.33	0	10.34	0		
16	5200	7.14	0	20	6.67	13.79	3.45		

	A	B	C	D	E	F	G	H	I
1	System_Ti	All Female	All Female	All Males	All Males	All Respon	All Respondents	High_Response	
2	ms	%	%	%	%	%	%	%	
3	0	7.14	0	28.57	0	17.86	0		
4	400	7.14	0	33.33	0	20.69	0		
5	800	14.29	0	40	0	27.59	0		
6	1200	14.29	0	46.67	6.67	31.03	3.45		
7	1600	28.57	7.14	46.67	6.67	37.93	6.9		
8	2000	28.57	7.14	53.33	6.67	41.38	6.9		
9	2400	28.57	7.14	46.67	6.67	37.93	6.9		
10	2800	28.57	7.14	46.67	13.33	37.93	10.34		
11	3200	28.57	7.14	46.67	13.33	37.93	10.34		
12	3600	28.57	7.14	50	12.5	40	10		
13	4000	28.57	0	50	12.5	40	6.67		
14	4400	28.57	0	50	12.5	40	6.67		
15	4800	28.57	0	50	6.25	40	3.33		
16	5200	28.57	0	43.75	0	36.67	0		

- 1) A single window metrics file with the maximum and average values for each segment and event marker
- 2) A data trace file per event marker

# ANALYTICS – ANALYSE SEGMENTS – OTHER OPS

There are a number of other useful operations you can perform when analysing segments

1 Collapse and expand different sections of the interface

2 Delete all or just selected processed data

3 Quick select/deselect or processed data

The screenshot shows the NeurolynQ interface with the following components:

- SELECT SEGMENT(S):** A list of segments including All Females, All Males, All Respondents, Females over 25, Females under 25, Males over 25, Males under 25, Political Left, Political Right, and Sample Segment.
- SELECT EVENT MARKER(S):** A list of event markers including Anthony Leis (Toggle), Bernie Neg (Toggle), Bernie Pos (Toggle), China Env (Toggle), Cleanup.com (Toggle), Donald Neg (Toggle), Donald Pos (Toggle), EcoMarine Oc (Toggle), fightglobalw (Toggle), Greenpeace 2 (Toggle), Hillary Neg (Toggle), Hillary Pos (Toggle), Jay Insee (Toggle), Kamala Harri (Toggle), Liz Warren (Toggle), NWPCA (Toggle), Pallet Centr (Toggle), Wildlands Wo (Toggle), WWF (Toggle), and Zane Greenpe (Toggle).
- SELECT ALGORITHM:** A list of algorithms including Group Response, Select Metrics (Any Response, High Response, Medium Response, No Response), GSR Peak Count, and GSR Z-Score.
- SELECT WINDOWS:** A section for selecting windows, including Metrics for full window, Metrics for first 5 seconds, and Metrics for last 5 seconds.
- RESULTS:** A table showing the results of the analysis, including the name of the segment, the average (AVG) and maximum (MAX) values for the selected metrics, and the percentage of high response.
- PLOT:** A line graph showing the response of the selected segment over time, with the x-axis representing time (00:28 to 04:12) and the y-axis representing the response (0 to 100).

# APPENDICES

The following options and functionality may be useful from time-to-time but will mostly likely not be needed on regular occasions.

# PROGRAM FIRMWARE - SHIMMER

You should only need to update the firmware on the NeuroLynQ units if you see this



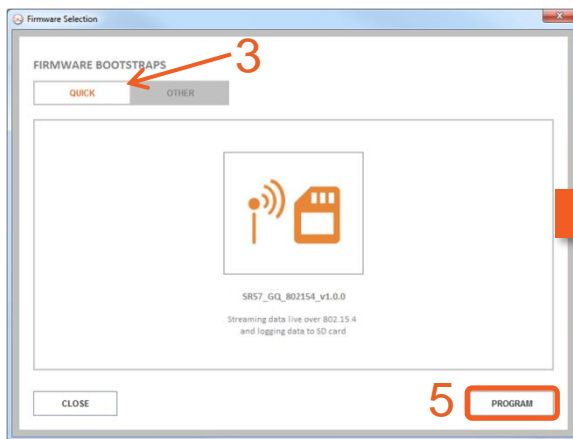
1) To program all the docked Shimmers that are switched on with firmware → click the “FIRMWARE” button.

N.B. Firmware can only be programmed before starting a new trial or recovering from the previous trial.

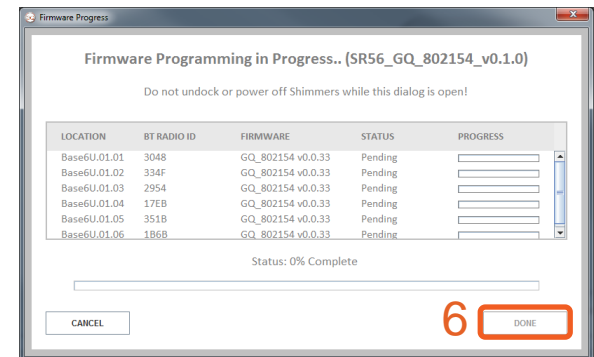
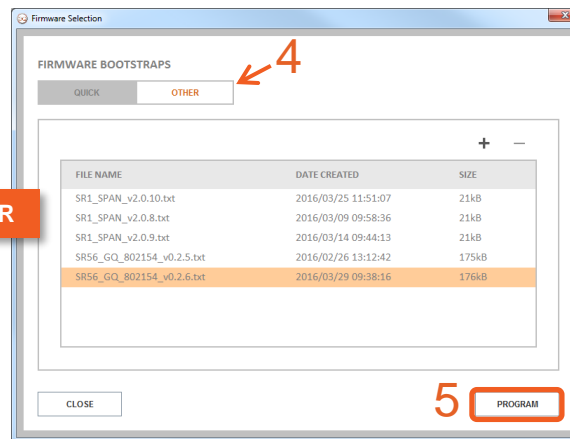
Rating	Channel	Freq (MHz)
1	11	2405
2	12	2410
3	13	2415
4	14	2420
5	15	2425
6	16	2430

# PROGRAM FIRMWARE - SHIMMER

You should only need to update the firmware on the NeuroLynQ units if you see this



OR



- 3) Select the most recently released firmware – “QUICK”.
- 4) Or select manually added firmware – “OTHER”.
- 5) Click “PROGRAM”.
- 6) Click “DONE” when complete.



# PROGRAM FIRMWARE - SPAN

1) If new firmware is available a notification is shown in the top right corner of the screen. New firmware can be downloaded after clicking on the notification icon.

2) Right-click on the Span.

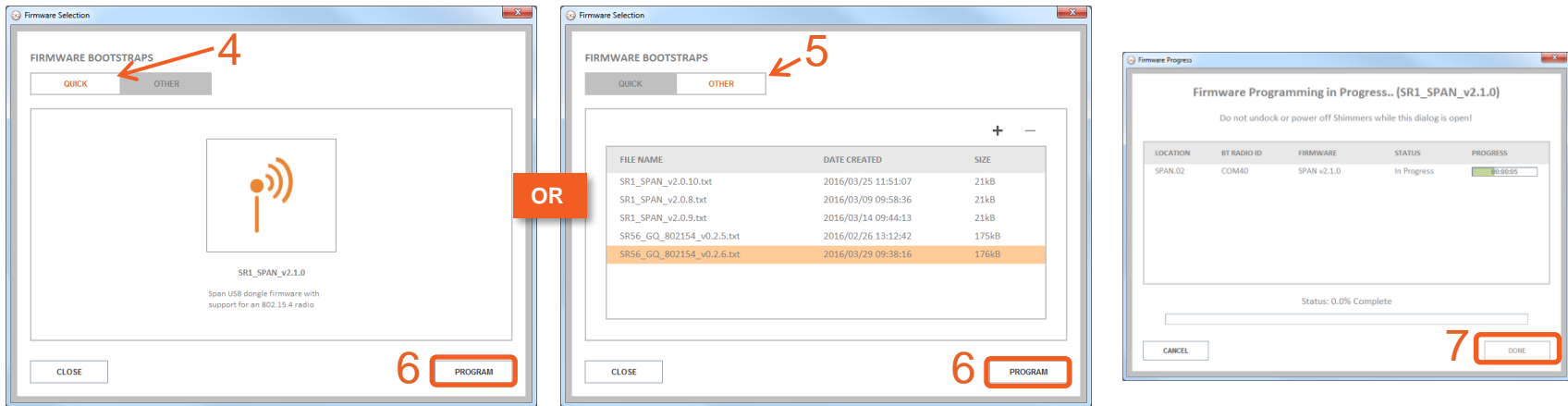
3) Click "Program SPAN Firmware."

**N.B.** Firmware can only be programmed before a trial is started or recovered.

The screenshot shows the NeuroLynQ software interface. The top right corner has a notification icon (1). The 'AVAILABLE DEVICES' section shows 'Span.01' with a right-click context menu open, highlighting 'Program SPAN Firmware' (3). The 'AVAILABLE HARDWARE' section shows hardware details and a 'RECOVER' button. The 'SPECTRUM ANALYSER' section shows a power vs. frequency graph and a table of spectrum results.

Rating	Channel	Freq (MHz)
1	11	2405
2	12	2410
3	13	2415
4	14	2420
5	15	2425
6	16	2430

# PROGRAM FIRMWARE - SPAN



- 4) Select the most recently released firmware – “QUICK”.
- 5) Or select manually added firmware – “OTHER”.
- 6) Click “PROGRAM”.
- 7) Click “DONE” when complete.

# APPLICATION SETTINGS

The screenshot displays the NeurolynQ application window. The top navigation bar includes the Shimmer logo and four main menu items: MANAGE DEVICES, LIVE DATA, MANAGE DATA, and ANALYTICS. On the right side of the navigation bar, there is a user profile icon, a notification bell, a gear icon for settings, and a help icon. A red callout box with an arrow pointing to the gear icon contains the text: "The application settings can be changed here." Below the navigation bar, a central white panel features four large icons representing the main application functions: Manage Devices (a smartphone with a wrench), Live Data (a heart and a drop), Manage Data (a folder with an arrow), and Analytics (a magnifying glass over a bar chart). Each icon is accompanied by a title and a brief description of its function.

NeurolynQ

shimmer | MANAGE DEVICES | LIVE DATA | MANAGE DATA | ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

00:00:00

The application settings can be changed here.

**Manage Devices**  
Program firmware, configure or import Shimmer data through the Dock or Base

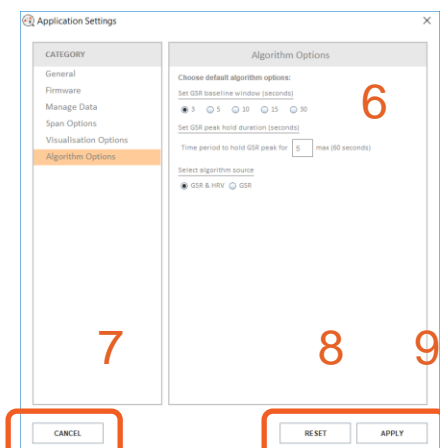
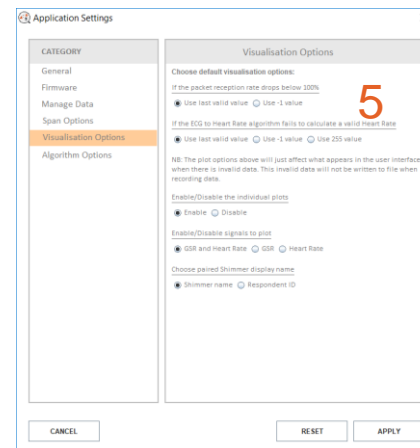
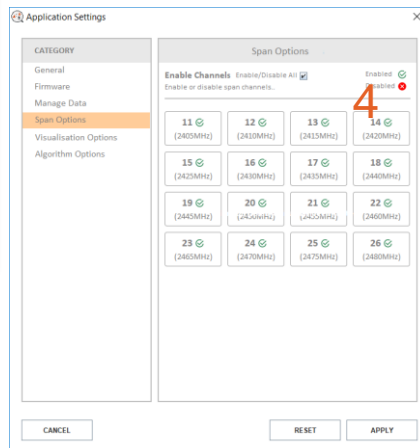
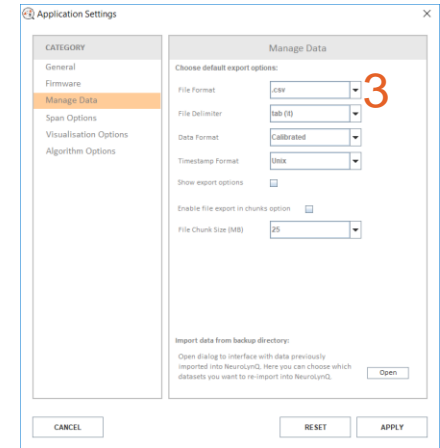
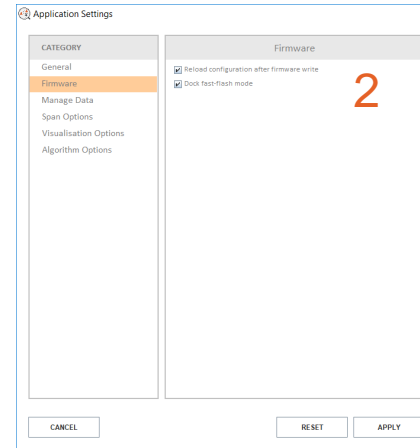
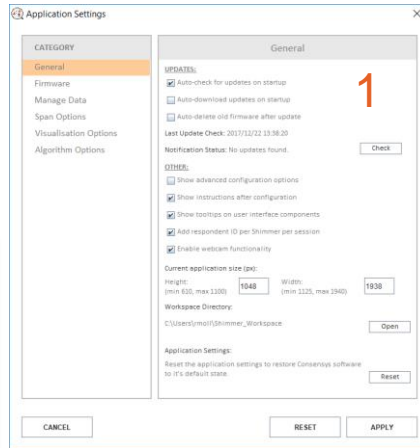
**Live Data**  
Plot the GSR and Heart Rate signals from up to 45 Shimmers simultaneously and view GSR group metrics

**Manage Data**  
Export, apply processing, or delete Shimmer data that has been recorded

**Analytics**  
Create, edit and analyse groups of respondents across different trials and sessions

# APPLICATION SETTINGS

- 1) General application settings.
- 2) Settings in relation to firmware programming.
- 3) Default export options for the Manage Data tab.
- 4) Enable/disable Span channels.
- 5) Adjust plot options – only relating to the visualization of the signals in “Live Data” – not to the actual data that is being recorded.
- 6) Change the algorithm parameters including the source of algorithm.
- 7) Hit “CANCEL” to cancel changing settings.
- 8) Hit “RESET” to restore settings – before they have been applied.
- 9) Apply settings by hitting “APPLY”.



# APPLICATION SETTINGS

- 1) Panel to add or edit Trial Settings to be used for NeuroLynQ@Home trial recording.
- 2) Hit "CANCEL" to cancel changing settings.
- 3) Hit "LOAD" to load existing NeuroLynQ@Home trial settings file (.nlq)
- 4) Save settings by hitting "SAVE".

Application Settings

NeuroLynQ@Home

1

Create NeuroLynQ@Home Trial Settings

Trial ID:

Trial Duration (ms):

S3 Access Key:

S3 Secret Key:

S3 Region:

S3 Bucket:

Stimulus:

Data Sampling Period (ms):

Battery Limit (%):

Response Algorithm:

Desktop Recording

Webcam Recording

Video Rec. Duration (ms):

Video Rec. Start Time in Unix (ms):

CANCEL

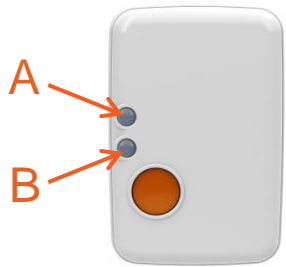
LOAD

SAVE

- a) Set trial name
- b) Set the trial duration. Set it to zero when you want the trial to record continuously until the stop button is pressed
- c) Key in S3 Details
- d) Set a URL which will open in an internet browser once the trial starts. Leave it empty if you don't have a URL.
- e) Enter approximate data sampling period. This cannot exceed 256Hz. We recommend setting it to 200ms.
- f) Enter required battery limit threshold to start the trial. E.g. setting it to 70% will prevent users from starting a trial if the Shimmer device battery capacity is not >70%. A value of 75% is recommended.
- g) Choose the Response Algorithm to be used for the recording, either GSR only or GSRRandHRV. Choosing GSR only will disable the optical sensor (HRV).
- h) If required you can enable either Desktop or Webcam recording.
- i) Set duration for the video recording. Set it to zero when you want the video to record continuously until the stop button is pressed.
- j) Set the start time of the video recording. Setting it to zero will start the video recording immediately when the trial starts.

# LED BEHAVIOR – SHIMMER - A

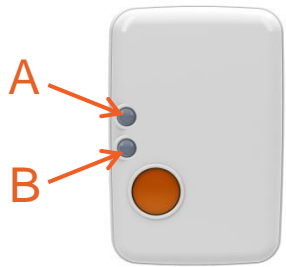
## LED Position A: Operational Status



		Status	LED Sequence	Description
Docked	Standby			GREEN - 0.1s ON/2s OFF
	Programming FW			BLUE - 0.1s ON/0.1s OFF
Undocked	Streaming Only			BLUE - 1s ON/1s OFF
	Recording Only			GREEN - 1s ON/1s OFF
	Streaming and Recording			1s BLUE/1s OFF/1s GREEN/1s OFF
	General Error			0.1s BLUE/0.1s GREEN

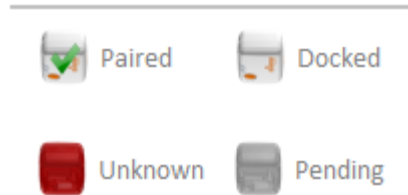
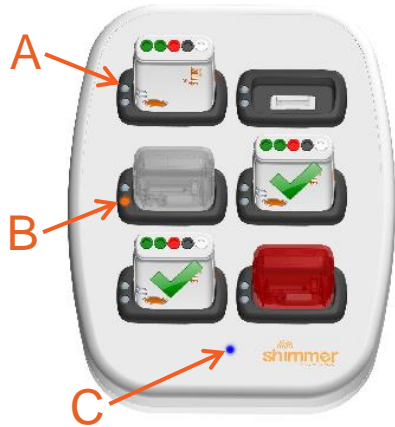
# LED BEHAVIOR – SHIMMER - B

## LED Position B: Battery Status and Specials



	Status	LED Sequence	Description
Docked	Fully Charged		GREEN – solid ON
	Charging		ORANGE – solid ON
Undocked	Fully Charged		GREEN - 0.1s ON/5s OFF
	Medium Charge		ORANGE - 0.1s ON/5s OFF
	Low Battery		RED - 0.1s ON/5s OFF
Specials undocked	Invalid Heart Rate		ORANGE – 0.1s ON/0.1s OFF
	User Button Press		GREEN – solid ON while User Button is pressed.

# LED BEHAVIOR - BASE



**N.B.** The table below applies to Bases that are switched on with NeuroLynQ running.

When a Base is powered up all the LEDs in positions A, B and C are solid ON until the Base detects the USB Port of the PC.

Position	Shimmer in slot	Active slot	Communicating with Shimmer (UART)	Accessing SD card of Shimmer	Description
A – per slot		N/A	N/A	N/A	GREEN – solid ON
B – per slot	N/A		N/A	N/A	ORANGE – solid ON
C	N/A	N/A			ORANGE / BLUE blinking



# USEFUL THINGS TO KNOW

- The **green** and **blue** LED (in LED location B)

1. Start *NeuroLynQ* and connect *Shimmer Dock* or *Base*.
2. Place the Shimmer in the *Shimmer Dock* or *Base*.
3. The Real Time Clock (RTC) of the Shimmer will be set.
4. The blinking stops after the RTC has been set.

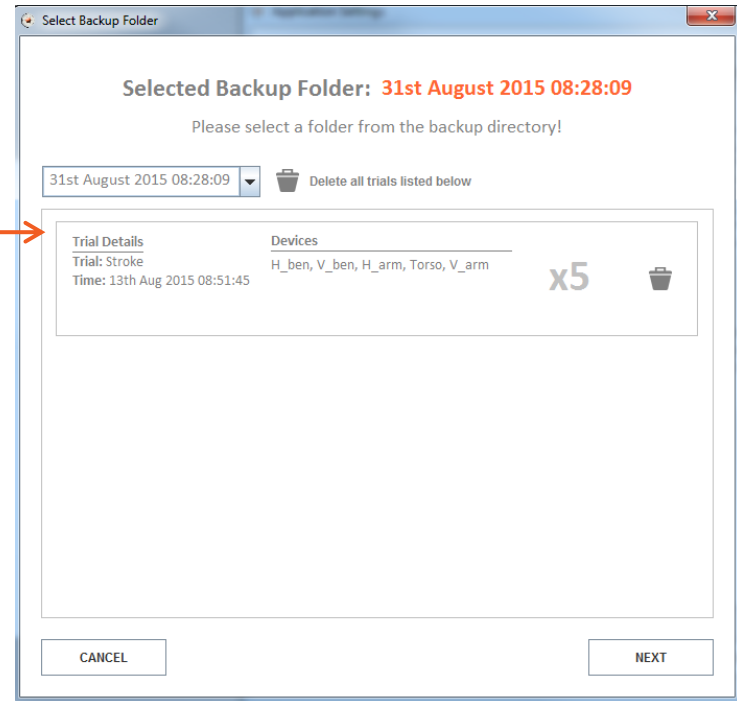
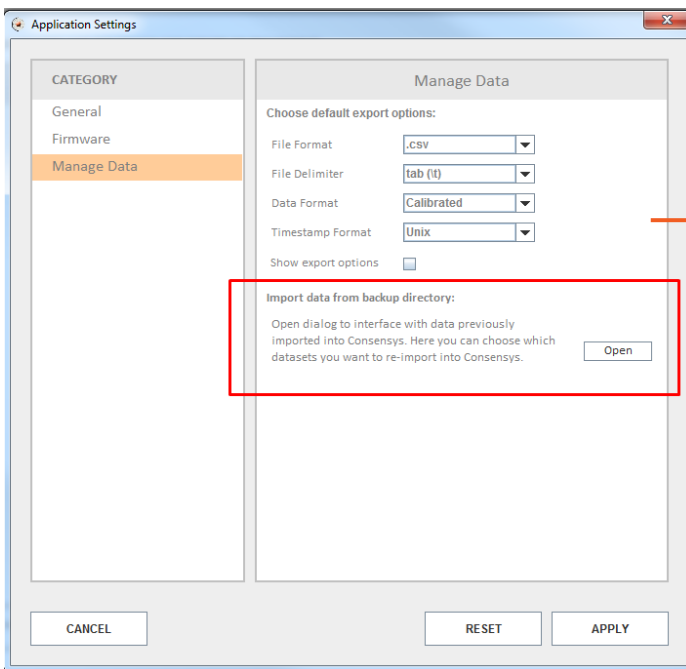


are **blinking rapidly**.

- **RTC:** If the “Real Time Clock” on the Shimmer is set, a relationship between “real-world time” and the local clock on the Shimmer is established, enabling synchronisation to a “common clock” among multiple Shimmer and external devices. **N.B.** Switching off Shimmers results in the loss of the RTC information. To set the RTC on the Shimmer, insert the Shimmer into a Shimmer Dock or Base while the Consensys software is running.
- **Session:** A dataset containing data from one or more Shimmers belonging to the same **Trial**, *i.e.* configured at the same time.

# USEFUL THINGS TO KNOW

- To import data from the backup, you only need to open the *Manage Data* category in the Application Settings and click on *Open* the backup

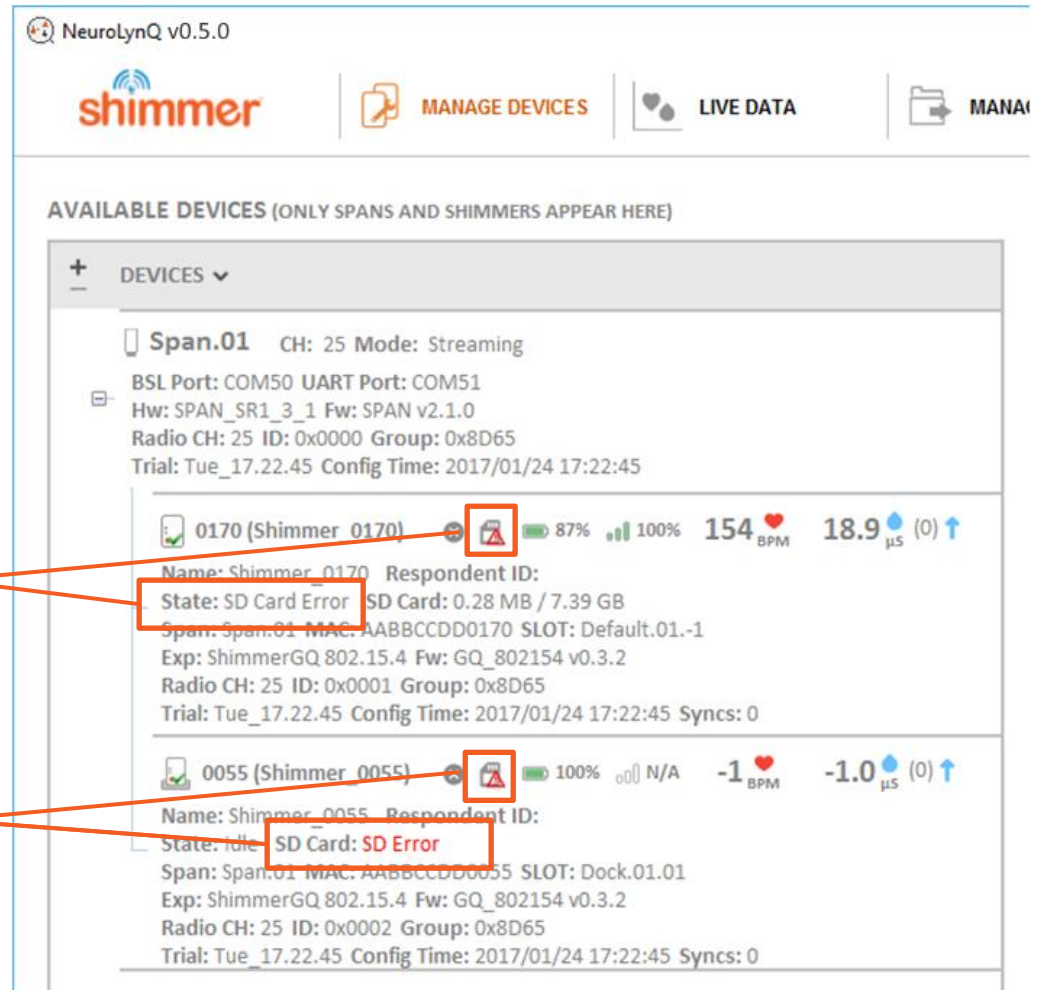


- After selecting a backup directory and clicking *Next*, you will be direct to the second step of the import process

# USEFUL THINGS TO KNOW

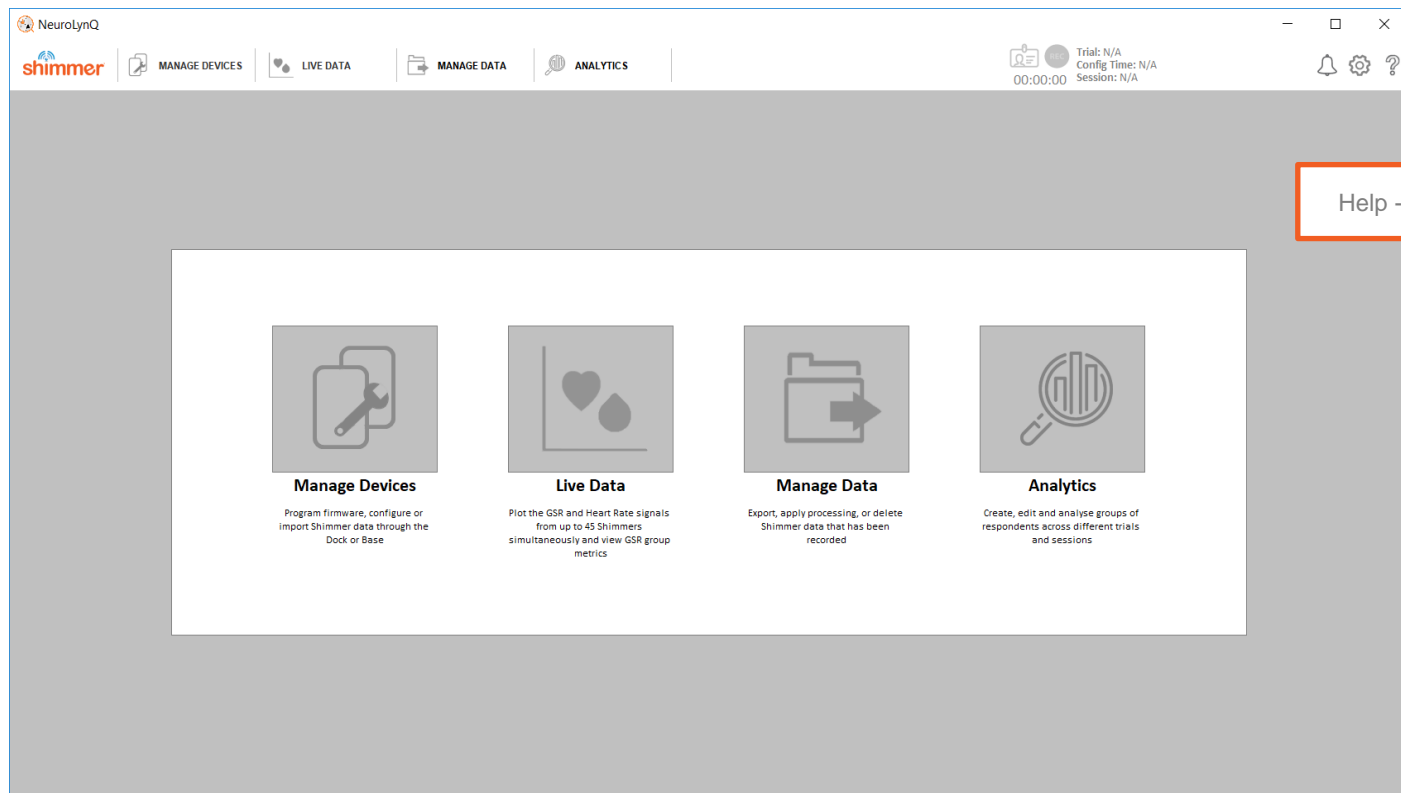
- There are two different SD error states - internal SD error and PC-to-Shimmer SD error. These can be identified through NeuroLynQ through the 'Advanced' device view

- The Shimmer is having difficulty accessing the SD card internally.
- The NeuroLynQ software is having difficulty communicating with the SD card.



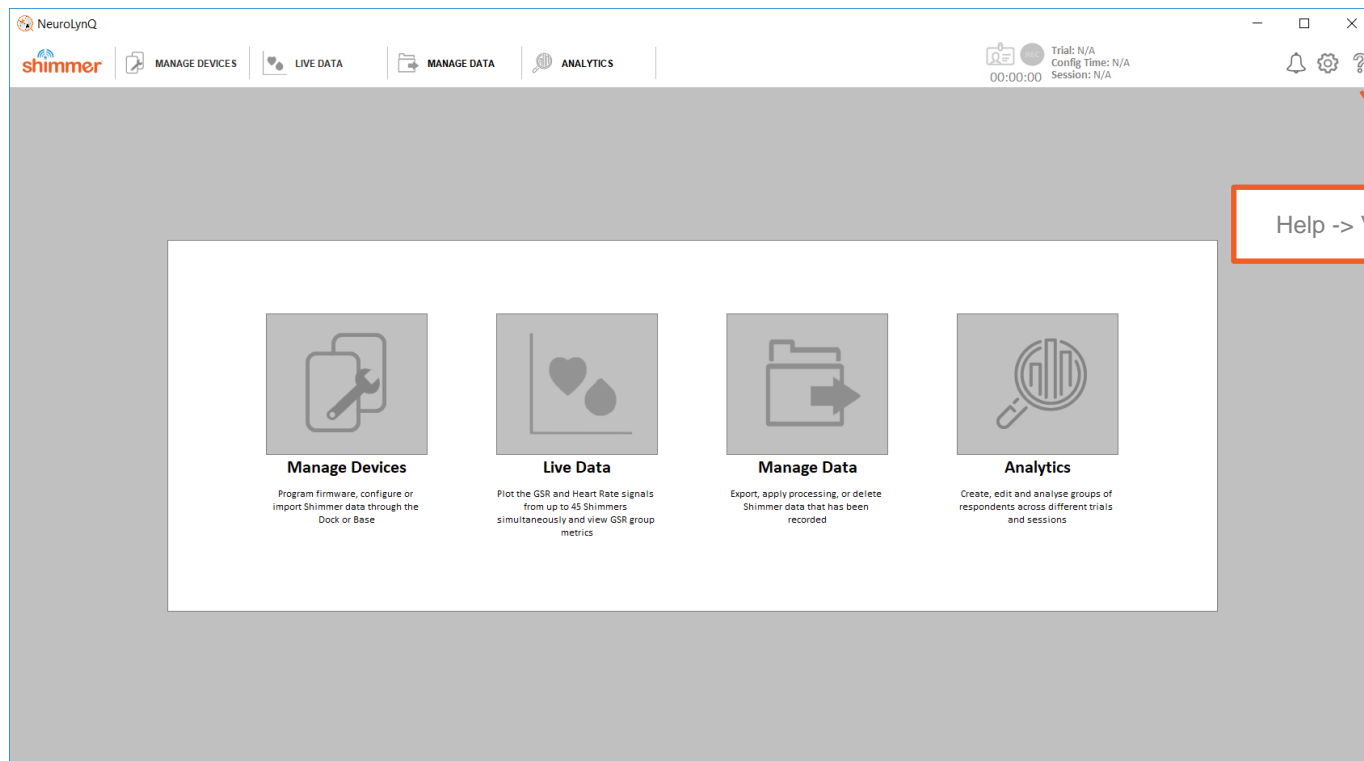
# USEFUL THINGS TO KNOW

- NeuroLynQ includes a link to this guide in the software. Please consult this document if encountering an issue with the NeuroLynQ software or hardware.



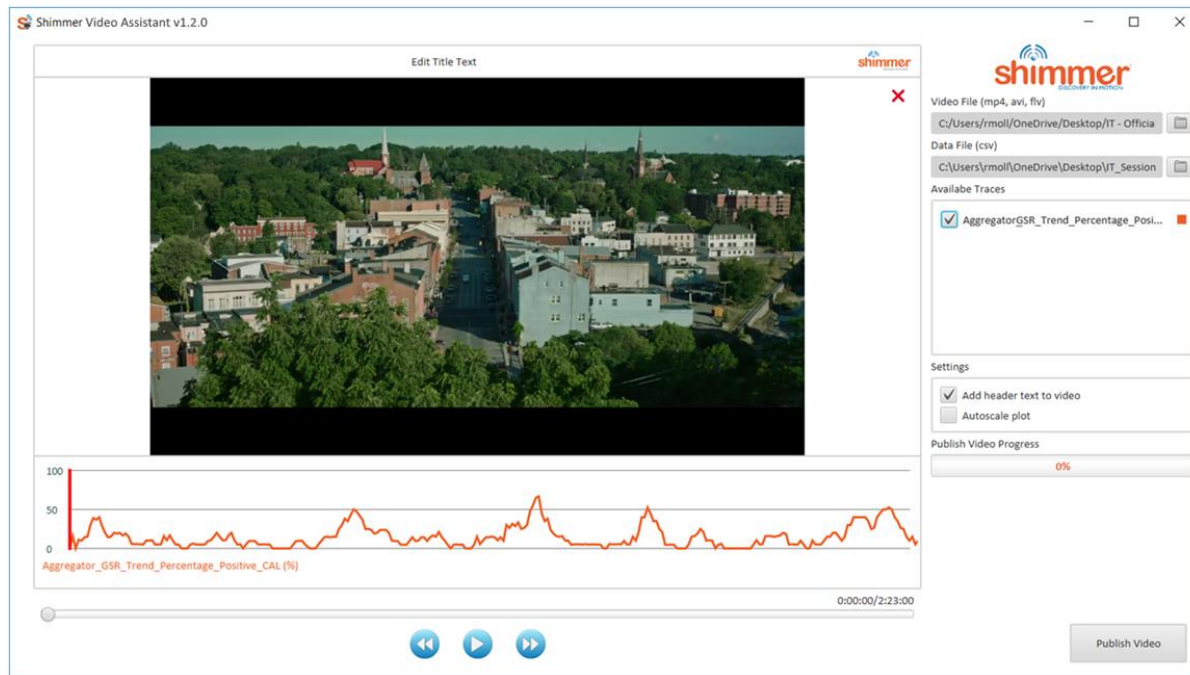
# USEFUL THINGS TO KNOW

- The NeuroLynQ package includes a separate software application that enables the user to add a data trace from a NeuroLynQ csv file onto an arbitrary video file and produce an output video file of same.



# USEFUL THINGS TO KNOW

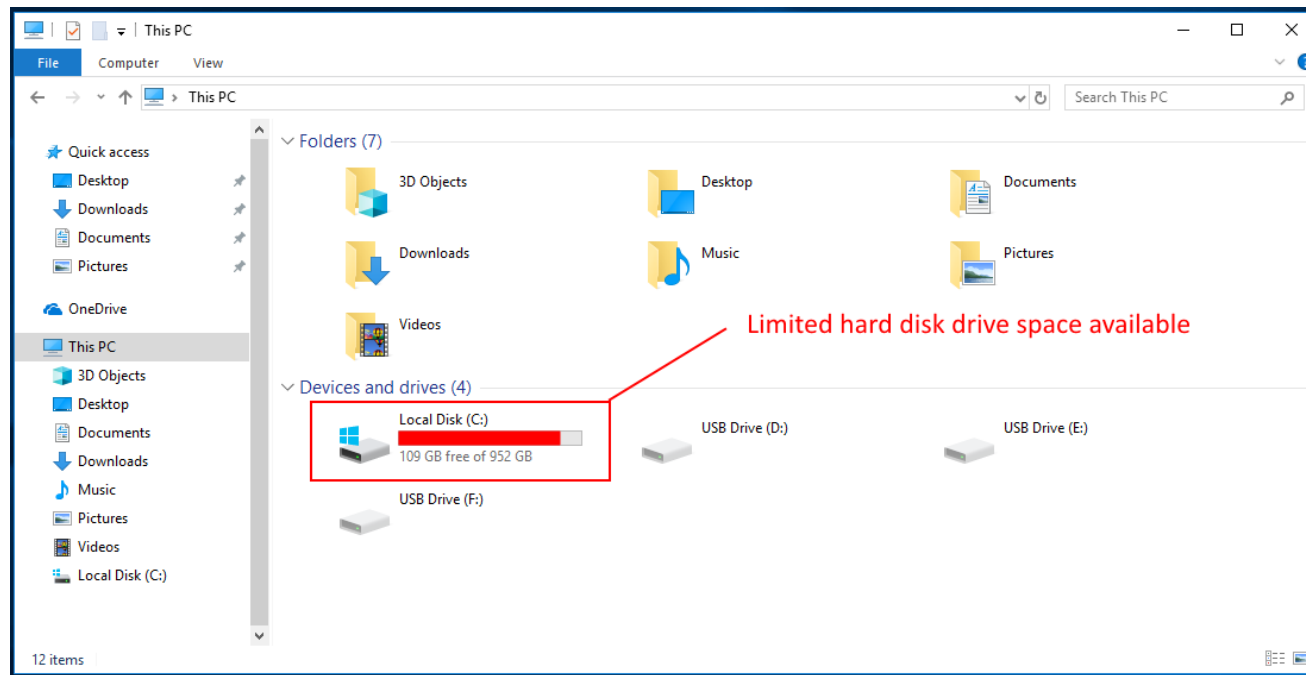
- Simply import a video file and a csv file and both will play back simultaneously when the *play* button is pressed. A new video file combining the source video and csv file can be produced by pressing the *Publish Video* button.



**Note:** It is a known issue that some media players e.g. Windows Media Player fail to play the audio from video files produced by the Shimmer Video Assistant software. It is strongly recommended to use the [VLC media player](https://www.videolan.org/vlc/download-windows.html) to play the published video files.

# TROUBLESHOOTING – LIMITED FREE HARD DISK DRIVE SPACE (P1)

1. If recording a significant amount of data in NeuroLynQ you may find the available memory on the hard disk drive nearing capacity which will limit the ability to record further data (see below for illustration of hard disk drive nearing capacity)
2. If step 1. above is observed, NeuroLynQ datasets should be moved from the hard disk drive to a secure external location, example procedural steps to follow on the [next page](#).



# TROUBLESHOOTING – LIMITED FREE HARD DISK DRIVE SPACE (P2)

## Example procedure to free-up hard disk drive space

1. Choose the NeuroLynQ datasets that you would like to archive from the 'Manage Data' tab.
2. Identify the dataset's database name (a set of ten digits e.g., '1435243126.db'). See [page 84](#) for how to do this.
3. Locate the corresponding folder (name of the folder is same as the database name e.g., '1435243126') in the 'Database' directory.
4. Make sure this folder has a database file (.db) and the corresponding video file(s) (.flv).
5. Move this folder safely to a secure location e.g. an external hard disk drive (Do not rename the folder.)
6. Once you restart the software, you will no longer find the dataset in the 'Manage Data' tab

## A few points to keep in mind..

- Once archived, for your convenience maintain a document with the dataset's details such as the trial name, database name, study details etc.
- If you would like to view the archived data in NeuroLynQ, please copy the dataset's folder to the 'Database' directory of the PC running NeuroLynQ and restart the software.
- Store the archived data in secure location.



# TROUBLESHOOTING – DOCK/BASE ISSUES

## INITIALISATION ERROR

NeuroLynQ

shimmer MANAGE DEVICES LIVE DATA MANAGE DATA ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

No SPANS Detected!

WEBCAM: None

Enable Webcam

RESET CLEAR SD (0/0)

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Spans: 0 Docks/Bases: 1 Shimmers: [0/0]

**Base6U.01 Failed:**

Base6U.01 Information:

- Base SSU, Com Port: COM66
- Base UART Com Port: COM67
- SSU, Com Port: COM68
- UART Com Port: COM69
- Drive Path: E:\
- Initialised: No
- Click this label to reinitialise the Base6U.01

**REINITIALISE BASE**

If pressing the above button doesn't resolve the issue, try the following steps:

- (1) Close the software.
- (2) Undock all of the sensors from the Base.
- (3) Remove the mains power supply and USB cable from the Base.
- (4) Plug the mains power supply into the Base.
- (5) Plug the USB cable into the Base.
- (6) Start the software.
- (7) The Base should now be initialised, sensors can then be inserted into the Base.

SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)

SPECTRUM RESULTS

Rating	Channel	Freq (MHz)
1	11	2405
2	12	2430
3	13	2415
4	14	2420
5	15	2425
6	16	2430

FIRMWARE (0/0) CONFIGURE (0/0) IMPORT (0/0)

# TROUBLESHOOTING – DOCK/BASE ISSUES

## DRIVER ERROR

NeuroLynQ

shimmer MANAGE DEVICES LIVE DATA MANAGE DATA ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A  
00:00:00

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

No SPANS Detected!

WEBCAM: None

Enable Webcam

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Spans: 0 Docks/Bases: 1 Shimmers: (0/0)

**Base6U.01 Failed:**

Base6U.01 Information:

- Base I2L Com Port: null
- Base UART Com Port: COM87
- I2L Com Port: COM88
- UART Com Port: COM89
- Drive Filter: null
- Initialisation: null

**DRIVER ERROR!**

Try the following steps:

- (1) Close the software.
- (2) Undock all of the sensors from the Base.
- (3) Remove the mains power supply and USB cable from the Base.
- (4) Plug the mains power supply into the Base.
- (5) Plug the USB cable into the Base.
- (6) Wait for Windows to install the USB drivers.
- (7) Start the software.
- (8) The Base should now be initialised, sensors can then be inserted into the Base.

If the above doesn't work, try the following:

Click here and download and run the 'setup executable' to install the Windows' FTDI driver

SPECTRUM ANALYSER: Power (dB) vs. Freq (MHz)

SPECTRUM RESULTS

Rating	Channel	Freq (MHz)
1	11	2405
2	12	2410
3	13	2415
4	14	2420
5	15	2425
6	16	2430

RESET CLEAR SD (00) FIRMWARE (00) CONFIGURE (00) IMPORT (00)

# TROUBLESHOOTING – DOCK/BASE ISSUES

## DRIVE PATH ERROR

NeuroLynQ

shimmer

MANAGE DEVICES

LIVE DATA

MANAGE DATA

ANALYTICS

Trial: N/A  
Config Time: N/A  
Session: N/A

00:00:00

AVAILABLE DEVICES (ONLY SPANS AND SHIMMERS APPEAR HERE)

No SPANS Detected!

WEBCAM: None

Enable Webcam

AVAILABLE HARDWARE (ONLY BASES AND SHIMMERS INSERTED INTO A BASE APPEAR HERE)

HARDWARE DETAILS: Spans: 0 Docks/Bases: 1 Shimmers: (0/8)

DRIVE PATH ERROR!

Click here and consult the 'Known Issues' section of the user guide for assistance

SPECTRUM ANALYSIS: Power (dB) vs. Freq (MHz)

SPECTRUM RESULTS

Rating	Channel	Freq (MHz)
1	11	2405
2	12	2410
3	13	2415
4	14	2420
5	15	2425
6	16	2430

RESET

CLEAR SD (0/0)

FIRMWARE (0/0)

CONFIGURE (0/0)

IMPORT (0/0)

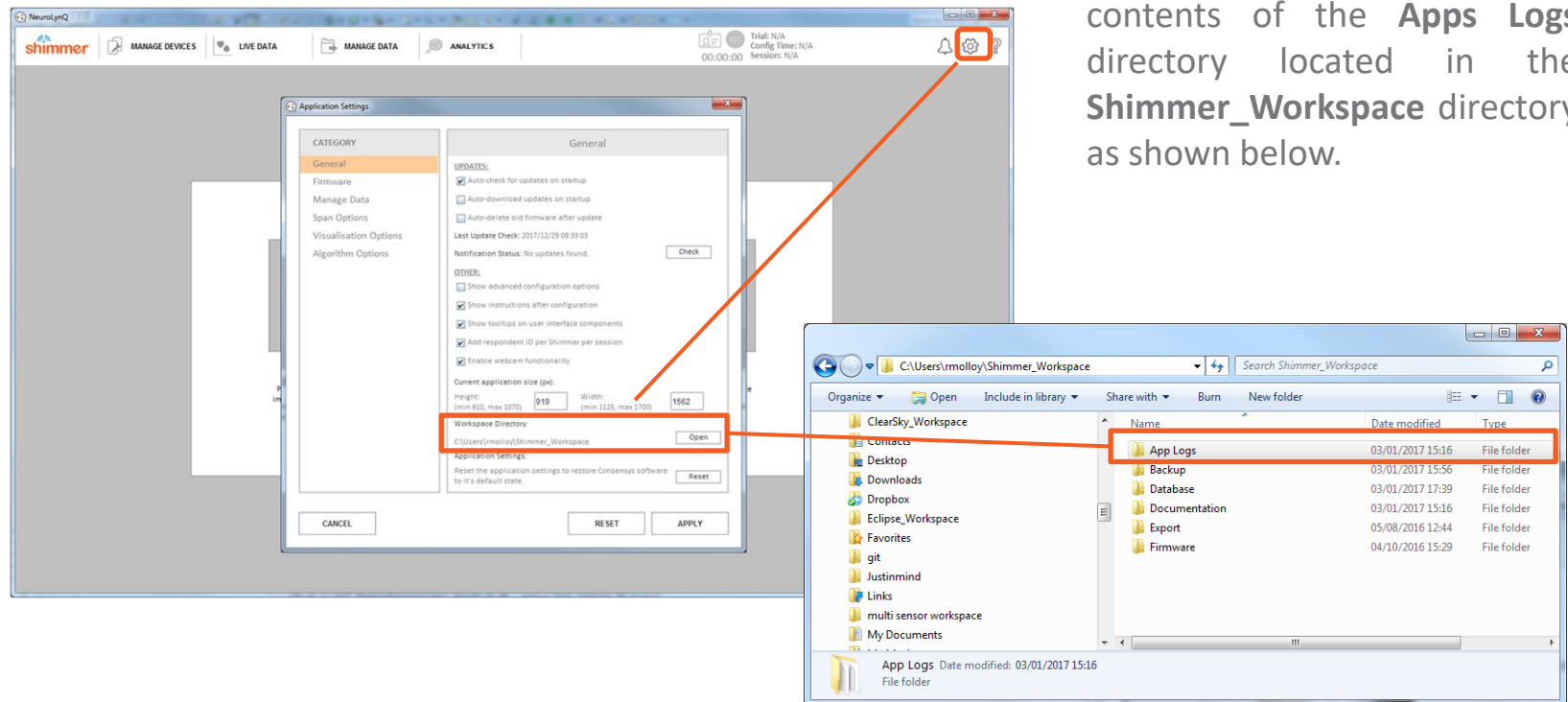
Contact the technical support team through Shimmer's online support system should you see this error.

<http://shimmersensing.com/support/wearable-sensing-support/>

# TROUBLESHOOTING –DOCK/BASE ISSUES

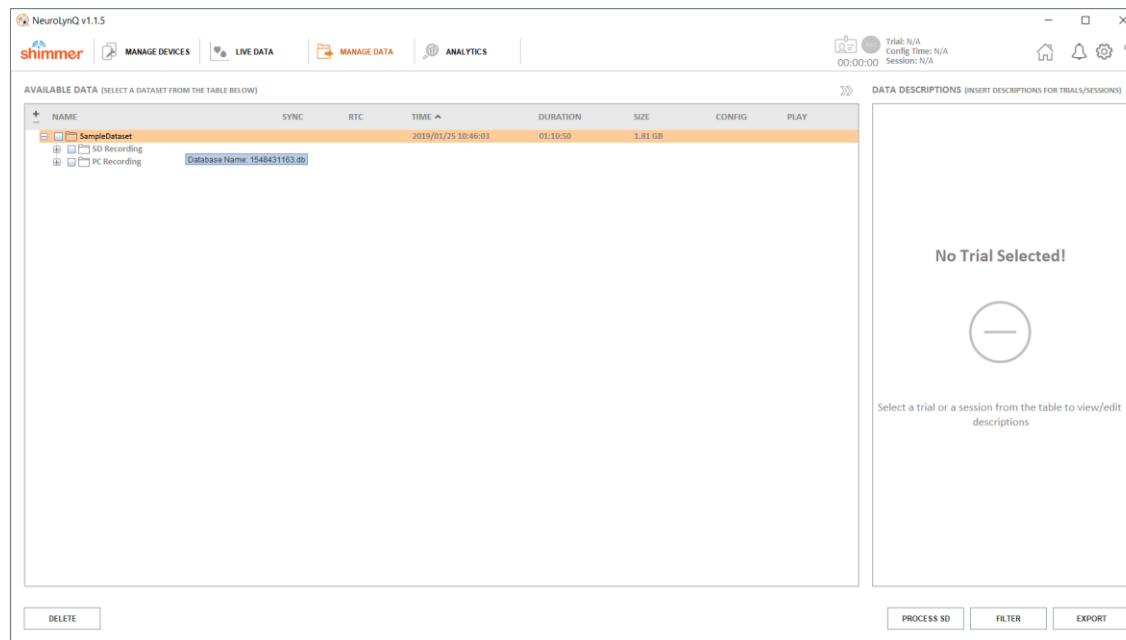
- If you experience any issue while installing or using the Shimmer Dock or Consensys Base, please consult the relevant sections of this guide. If the issue has not been resolved, please submit a support query through the support section of our [website](http://www.shimmersensing.com)<sup>1</sup>.

**N.B.** Make sure to include the contents of the **Apps Logs** directory located in the **Shimmer\_Workspace** directory as shown below.



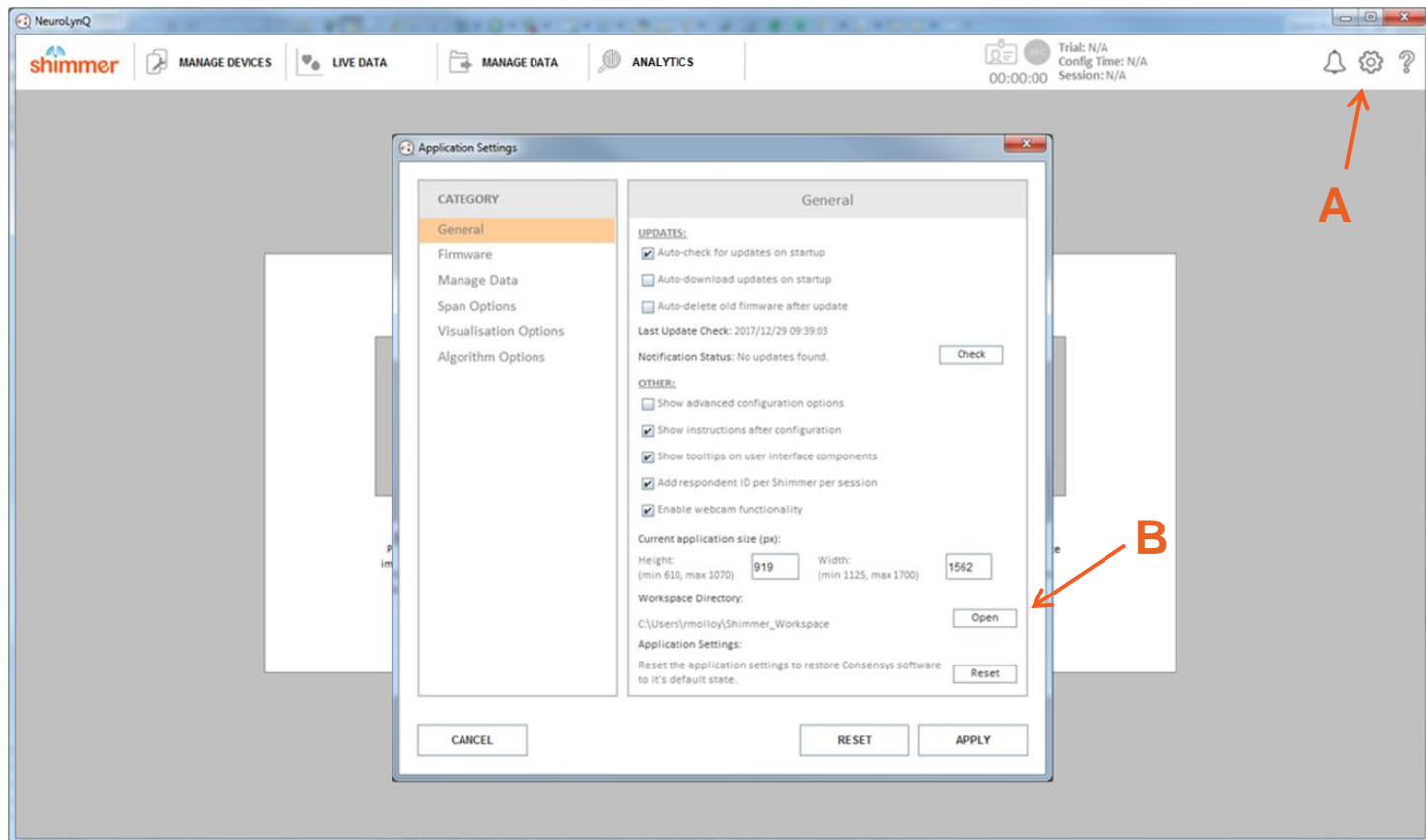
# TROUBLESHOOTING – RECORDED DATA

- If you experience an error with your recorded data in NeuroLynQ 'Manage Data', please consult this document first. If the issue has not been resolved, please submit a support query through the support section of our [website](#)<sup>1</sup>. **N.B.** please include the relevant **Database File(s)** from the Database directory and **Binary File(s)** from the Backup directory as outlined in this section.
1. To identify the appropriate database file, hover your mouse over the trial in the NeuroLynQ 'Manage Data' tab. The file name will be a set of digits (e.g., '1435243126.db') as below. You can navigate to the database file by right click -> Open Directory



# TROUBLESHOOTING – RECORDED DATA

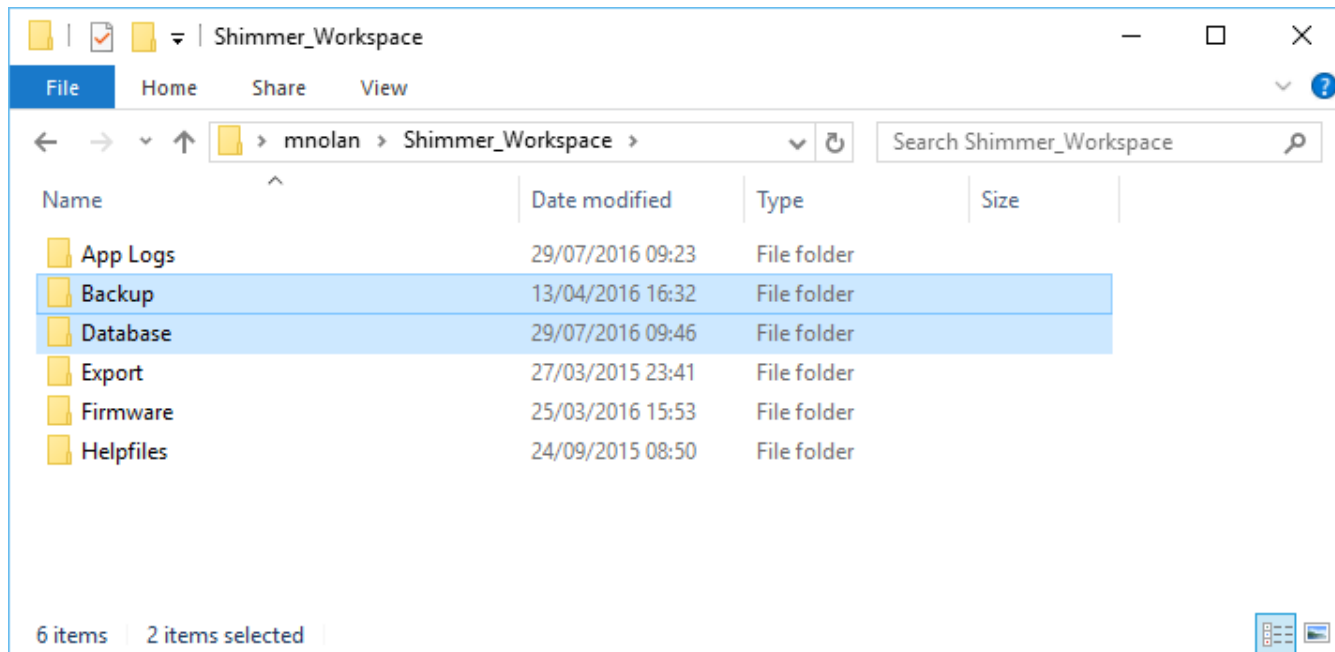
2. To navigate to the **Shimmer\_Workspace** directory:
  - A. Click on the NeuroLynQ 'Application Settings' menu
  - B. Click on the 'Open' button to open the workspace directory



# TROUBLESHOOTING – RECORDED DATA

3. The Shimmer Workspace will appear as below. The important directories to note are the 'Backup' and 'Database' directories - as highlighted.

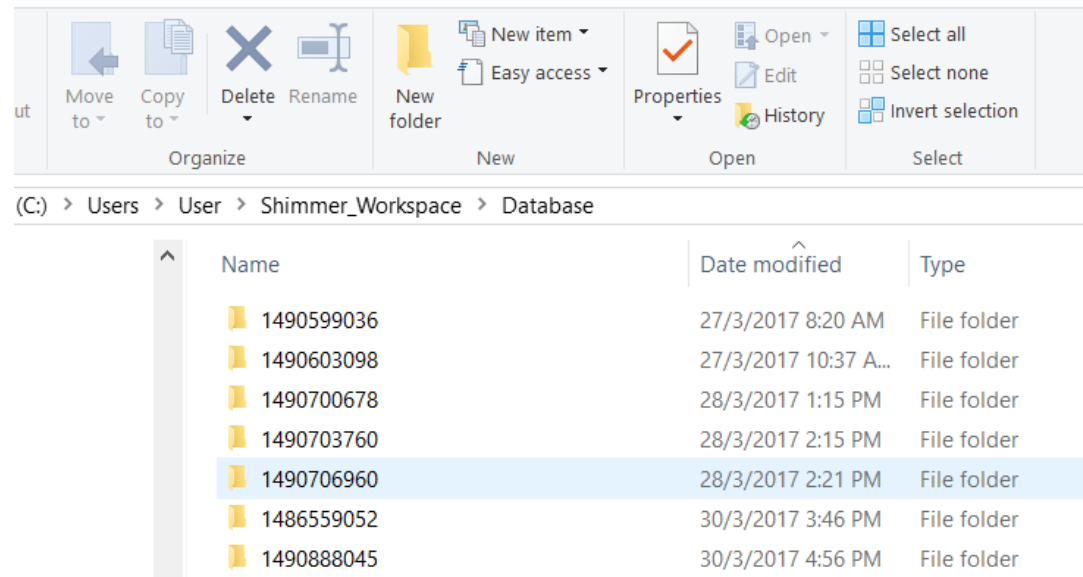
The 'Backup' directory is only relevant if data was imported from the Shimmer's SD card and is not used if data is solely recorded over a Bluetooth connection.



# TROUBLESHOOTING – RECORDED DATA

## 4. 'Database' Directory:

This directory stores a database folder per 'trial' whereby the database filename is the trial configuration time in Unix Timestamp format. For example, the selected database below, '1490706960', corresponds to a trial which was configured on the '28th March 2017 at 14:16 GMT+1' (online converter example [here](#)).



The screenshot shows a Windows File Explorer window with the following structure:

- Address bar: (C:) > Users > User > Shimmer\_Workspace > Database
- Command bar: Organize (Move to, Copy to, Delete, Rename), New (New folder, New item, Easy access), Open (Properties, Edit, History), Select (Select all, Select none, Invert selection).
- File list:

Name	Date modified	Type
1490599036	27/3/2017 8:20 AM	File folder
1490603098	27/3/2017 10:37 A...	File folder
1490700678	28/3/2017 1:15 PM	File folder
1490703760	28/3/2017 2:15 PM	File folder
1490706960	28/3/2017 2:21 PM	File folder
1486559052	30/3/2017 3:46 PM	File folder
1490888045	30/3/2017 4:56 PM	File folder



# TROUBLESHOOTING – RECORDED DATA

## 5. 'Backup' Directory:

This directory contains the binary data files copied from the Shimmer during the import of data that was recorded to the Shimmer's on-board SD card. The structure of the directory is as shown below. If sending this data to Shimmer Support, it is sufficient to just identify the import date, create a ZIP of that directory and send that to Shimmer support'.

**Level 1** Consensys import date

**Level 2** Bluetooth MAC address per Shimmer

**Level 3** 'data' directory as copied directly from each Shimmer's SD card

**Level 4** Trial name (e.g., 'Shimmer\_cal1') and configuration time in Unix format (e.g., '1435224503' or 25<sup>th</sup> June 2015 09:28:23 GMT)

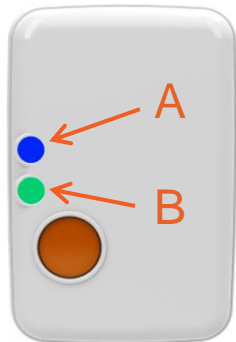
**Level 5** Shimmer name (i.e. 'Shimmer') and the recorded session number (i.e., 000)

# KNOWN ISSUES

## Firmware

It is a known issue in *SR57\_GQ\_802154\_v1.1.0.txt* firmware that on very rare occasions (~1 in 50 power cycles) a sensor unit can freeze or lock-up indicated by the LED pattern shown in the image below. There is a **known workaround** solution for this issue should it arise which is to:

1. Power OFF the sensor unit
2. Wait for ~5seconds
3. Power ON the sensor unit



Both LEDs (A and B) staying powered ON permanently when the unit is powered ON indicates the unit is in a frozen or locked-up state

Workaround solution here

# FURTHER QUESTIONS?

Why not reach out to us through our online ticketing support system?

<http://shimmersensing.com/support/wearable-sensing-support/>

Or contact us through one of our social media channels

