Software, Data Quality, Analysis, Support

Wireless Telemetry by Open Source Instruments

24/7 Recording with Cohabiting Animals

Software

Open Source Instrument's data acquisition software is **free**, **open source**, and distributed under the GNU Public License. Software updates are made readily available for free. LWDAQ runs equally well on Linux, Windows, and MacOS. The acquisition hardware may be controlled by a single computer or be configured for access over a local area network or the internet. Our camera provides high-definition video recording synchronized with EEG data.

Data Quality

Noise Spectrum: A3028Q3, 512 SPS, 0.3-160 Hz
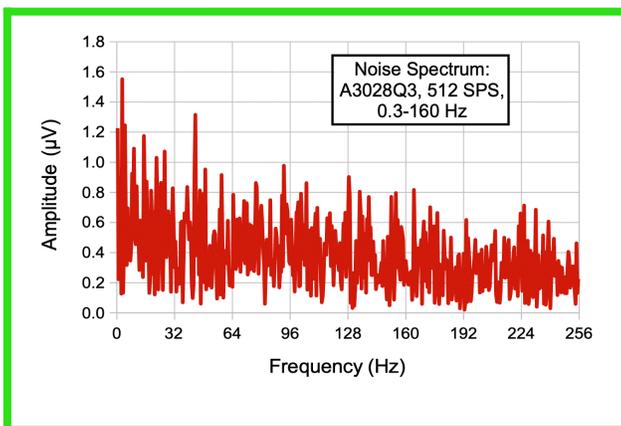
Biopotentials are low-pass filtered, but are otherwise **undistorted by digitization and transmission**. When electrodes are well-secured, EEG signals will be entirely free of movement artifact.

OSI Transmitters consistently provide data suitable for publication as seen in these examples. Our instruments' performance is fully characterized. We guarantee reception from active animals.

- Total Noise **less than 8 μV rms** (measured at 0.3 - 160 Hz)

- Main's hum noise **less than 1 μV** (60 Hz noise source in USA)

- No device generated movement artifacts

- Frequency response provided along with each transmitter

- **Guaranteed, reliable reception from active, cohabiting animals**

- Robust reception **throughout an IVC rack**

- No battery recharge required

- **Faraday enclosure** required

Frequency Response of Batch of A3028C Transmitters 0.3-80 Hz, 256 SPS
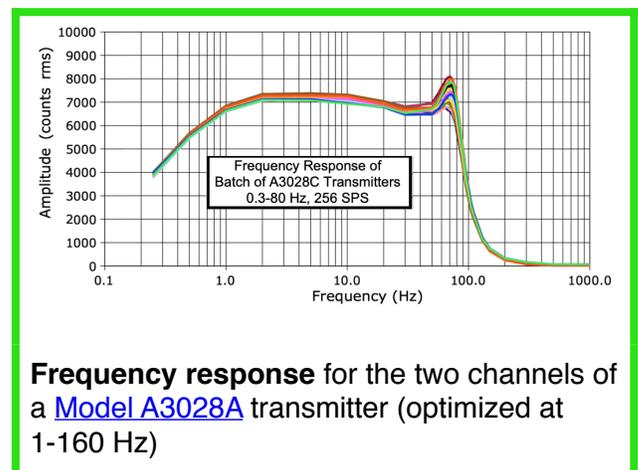
Frequency response for the two channels of a Model A3028A transmitter (optimized at 1-160 Hz)

Analysis

[Neuroarchiver](#) – Provides a suit of functions for our system. The Neuroarchiver downloads transmitter signals from telemetry data receivers and writes the signals to disk. It reads signals back from disk and displays them. The Neuroarchiver reads, displays, and processes signals stored on disk. It can perform error checking and reconstruction as required, and display the signals and their spectra.

[Event Classifier](#) – Allows scientists to develop detection patterns for real-time event classification. The Neuroarchiver's Event Classifier allows scientists to build libraries of example events that the Neuroarchiver will then use to perform automatic event detection in long, continuous recordings. Its job is to take intervals that we have classified by eye, gather them together in an *event library*, and use this library to classify tens of thousands of intervals automatically.

[Ictal event](#) recorded by Dr. Rob Wykes (Institute of Neurology, UCL) using OSI's dual channel A3028A transmitter

[Batch Classifier](#) – Applies detection patterns to the tens of thousands of hours of recordings that are produced by continuous, long-term recordings. It applies the event library to previously-recorded characteristics files produced by the same classification processor. When the Batch Classifier compares an interval to its library, it calculates the separation of the interval from each library event in the *n*-dimensional metric space. The library event closest to the new interval is the *matching event*, and the distance between them is the *match distance*.
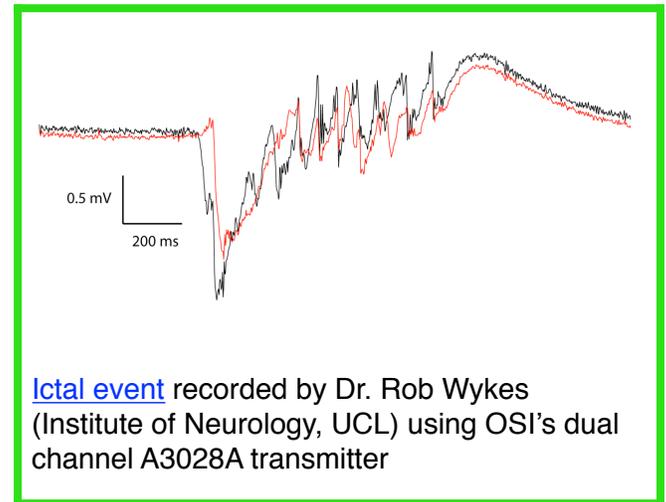
Support

As a company founded by scientists, Open Source Instruments values collaboration and transparency. We assist our customers in choosing the right equipment for their experiment and provide support throughout all stages of use. With a standard system setup, OSI provides **10 hours of technical support** at no additional charge. All of OSI's instruments have been designed at the request of our customers. We continue to offer custom engineering services and modifications.