

# The New Auditory Brainstem Response Module in the HEARLab Testing Suite

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## HEARLab Testing Suite

The HEARLab testing suite has been designed to record and analyse electrophysiological data for objective assessment of auditory function. It is a versatile device that can be configured and controlled by a laptop computer to fully control stimulus levels, signal pathways and response conditioning. It is commercially available and has been used in clinics around the world.

**ACA module** The first module HEARLab ACA measures **cortical auditory evoked potentials (CAEPs)**. It is useful for providing objective information on the assessment of auditory function and hearing aid effectiveness in infants and very young children.

## HEARLab ABR module

### HEARLab ABR module

The second and new module HEARLab ABR is a 2-channel recorder of **auditory brainstem response (ABR)** waveforms. It has been developed on the same HEARLab platform. It is intended for use by audiologists and other health professionals to record and assess the auditory brainstem response.

An ABR audiometry is often done on a newborn for a hearing screening and diagnostic assessment. The test can also be done on a child to estimate hearing level if a behavioural assessment cannot be obtained. The ABR test is best performed if the child is asleep or physically relaxed, inactive and eyes closed.

#### Equipment:

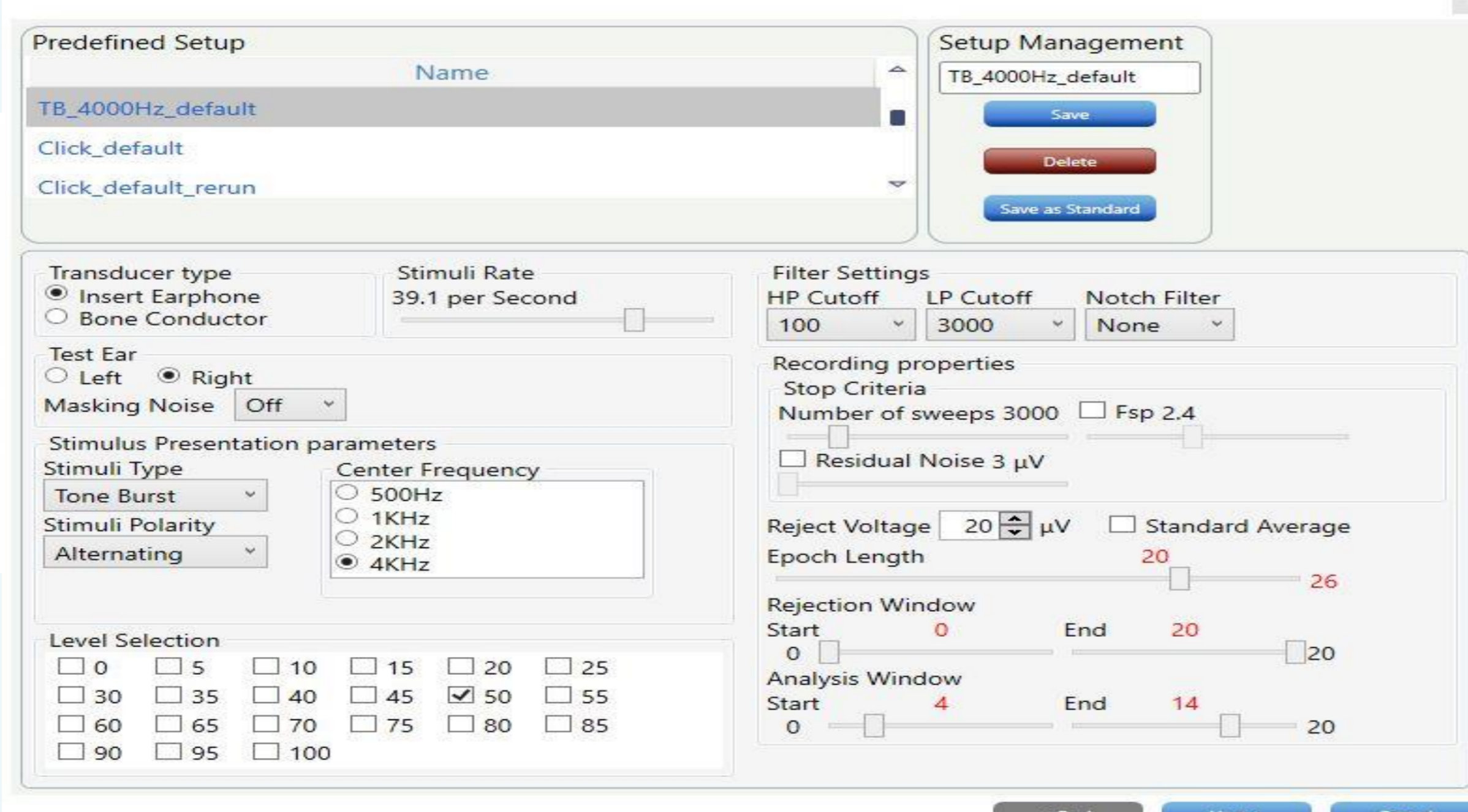
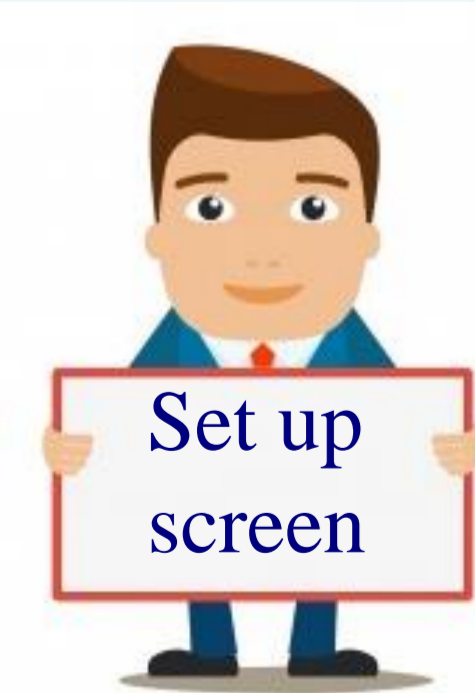
- A stimulus controller
- A unit for electrode connections
- Transducers: a pair of insert earphones & bone conductor
- Four electrodes (connected with single use self-adhesive ECG electrodes)
- A laptop computer

All of these equipment is portable and easy to set up.



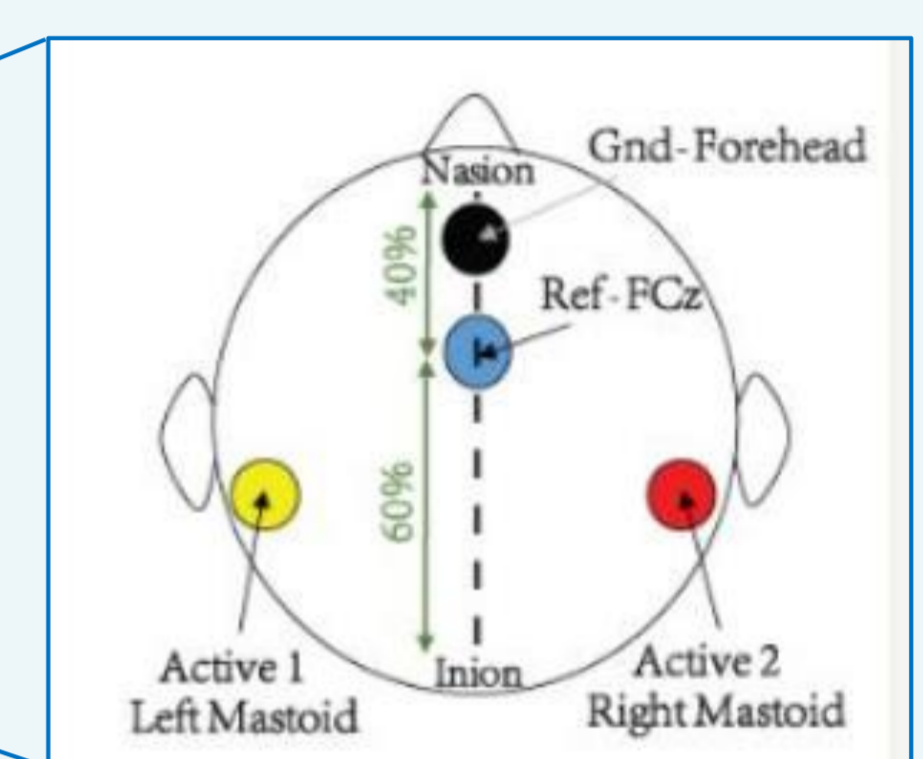
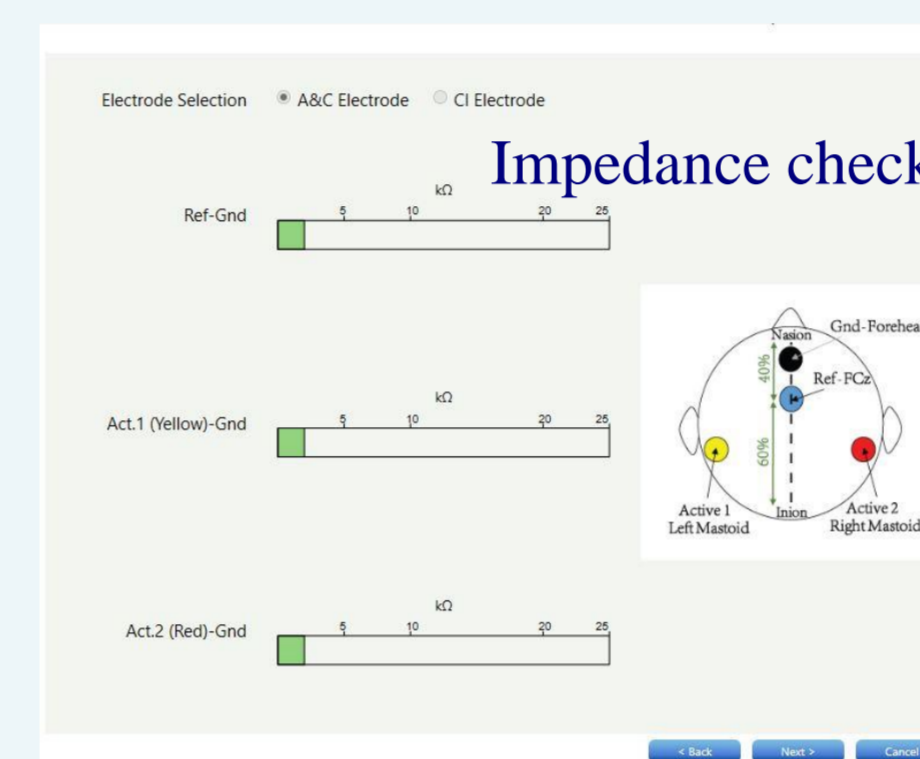
#### What are available in the ABR module?

- ✓ A rich set of test parameters is available for the user to optimise the test setup to suit a specific patient group. Test setups may be saved as predefined setups to save setup time when conducting similar assessments.
- ✓ Multiple test runs, if selected, are conducted automatically one after another starting at the highest level and finishing at the lowest level.
- ✓ Stop conditions may be set by the maximum numbers of accepted sweeps, when the  $F_{sp}$  value exceeds a set number, or when the residual noise is below a set value.



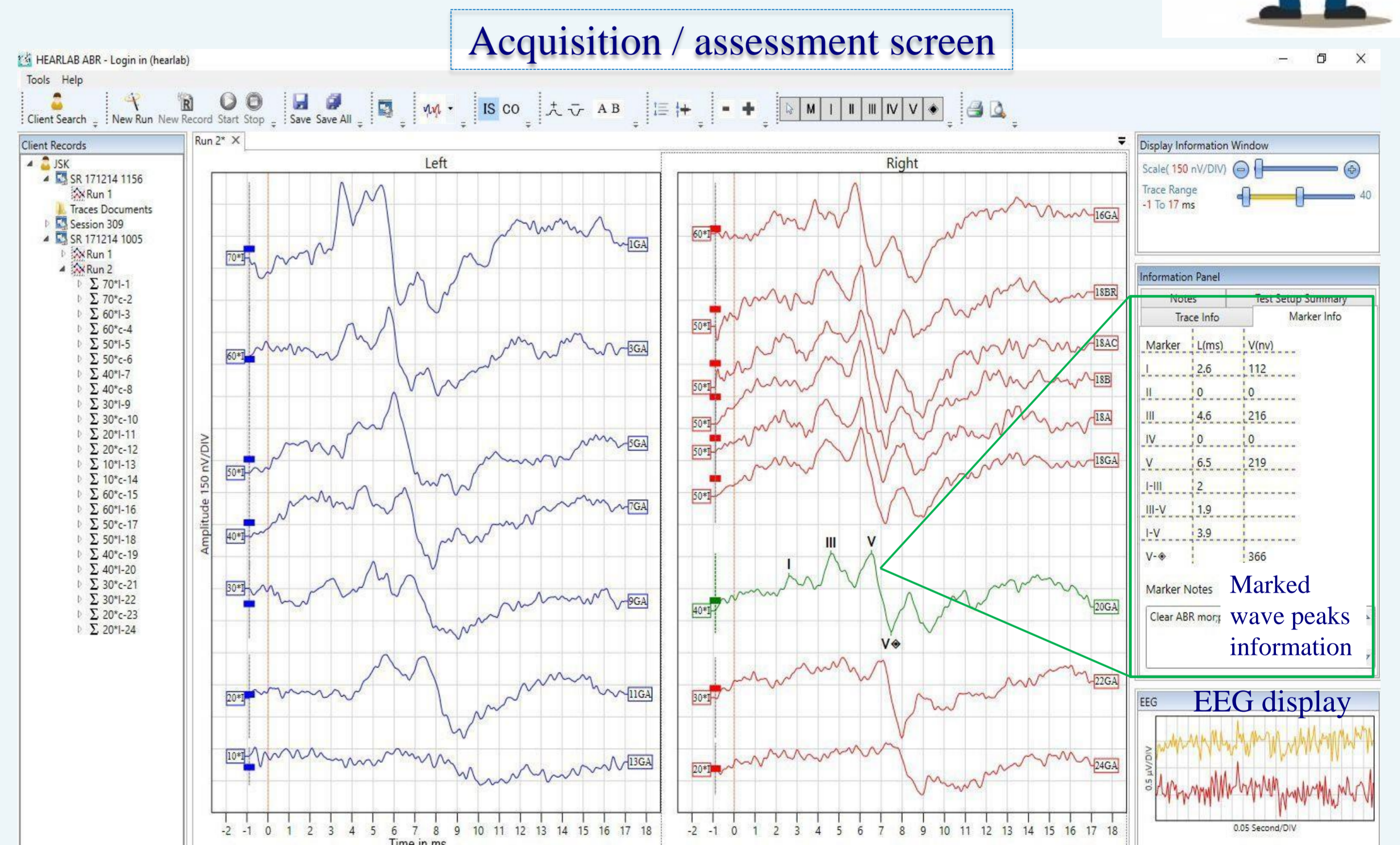
Parameter	Options
Stumuli	2-0-2 tone bursts at 0.5, 1, 2, 4 kHz & clicks 100 $\mu$ s
Output	Insert phones or bone conductor Masking selectable using wide band noise
Presentation Level	Inserts: 0 – 100 dB nHL, 5 dB steps Bone: 0 – 60 dB nHL, 5 dB steps

### Acquisition – 2 EEG channels (Cz or Fz – both mastoids)

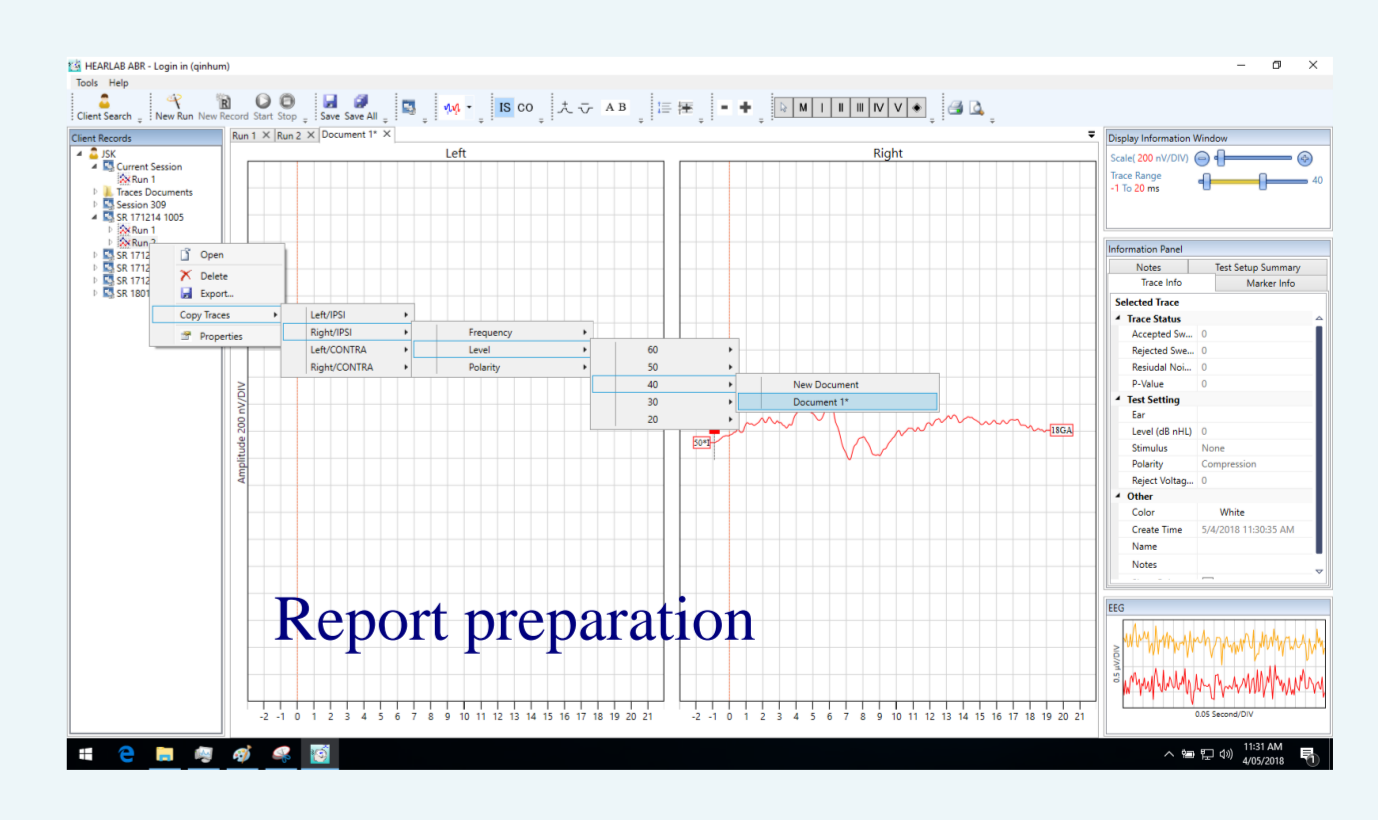
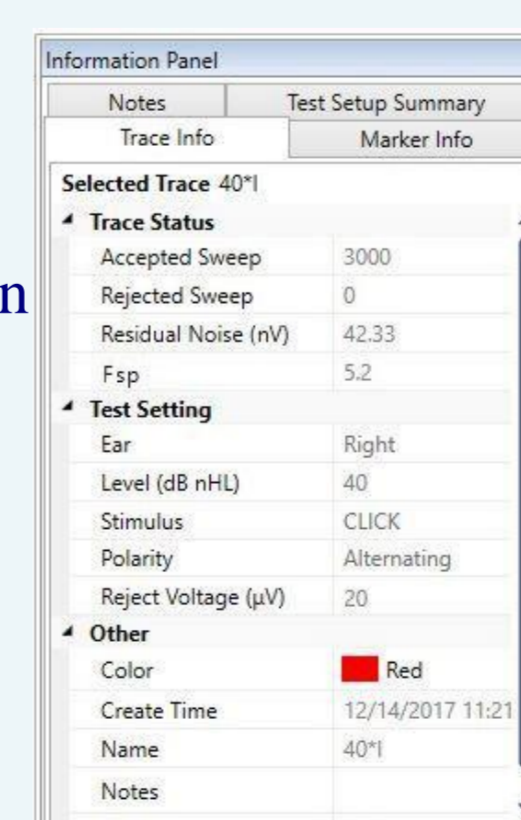


### Viewing and Reviewing ABR traces

- ✓ ABR traces for left and right ears are shown in separate panels. Two channels (ipi- and contra-lateral mastoids) are recorded.
- ✓ EEG is always displayed for monitoring of the recording condition.
- ✓ Averaged traces of A and B buffers are also available for viewing.
- ✓ Trace information - details shown by selecting the trace
- ✓ To assist review, selected traces may be added, subtracted or centred. Tools for marking the response peaks and troughs are provided and the latency times and amplitudes are automatically tabulated for review.



### ABR waveform information



**Clinical implication:** The ABR module will be released as a clinical tool for identification of hearing impairment and may also be used as a screening tool for differential diagnosis.

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