What is NAL-ACA?

NAL-ACA is a hearing assessment module that provides two different types of assessments: aided cortical assessment (ACA) and cortical tone evaluation (CTE).

ACA

ACA uses three natural speech sounds with low, mid, and high frequency emphasis respectively. ACA presents these at conversational levels, and measures the resulting evoked cortical responses. It is useful for providing objective information on the assessment of hearing aid effectiveness in infants and very young children.

CTE

CTE is a tool that assists clinicians to estimate a client’s hearing threshold based on his/her cortical responses. It is particularly useful for clients who may not benefit from behavioural test methods.

In both ACA and CTE, an online statistical analysis is performed on the acquired responses to give an indication of the probability that there is a response detected.

NAL-ACA’s basics

The following table lists the basic specifications of the NAL-ACA module:

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>ACA</th>
<th>CTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech sounds</td>
<td>/m/, /n/, /g/</td>
<td>Tone bursts: 500 Hz, 1 kHz, 2 kHz, 3 kHz, 4 kHz</td>
</tr>
<tr>
<td>Output</td>
<td>ACA</td>
<td>CTE</td>
</tr>
<tr>
<td>Free field only</td>
<td>Insert earphones, bone conductor</td>
<td></td>
</tr>
<tr>
<td>Presentation Level</td>
<td>ACA</td>
<td>CTE</td>
</tr>
<tr>
<td>55, 65, 75 dB SPL</td>
<td>-10 to 120 dB HL, 5 dB steps</td>
<td></td>
</tr>
<tr>
<td>Acquisition</td>
<td>1 channel recording</td>
<td></td>
</tr>
</tbody>
</table>

What equipment is required for NAL-ACA and will it be easy to set up?

NAL-ACA is part of the HEARLab test suite—a system consisting of a versatile device that is software configured and controlled. Each test performed by the suite is to be implemented as a separate software module. The equipment required for NAL-ACA is minimal:

- a unit for delivering stimulus output
- a unit for electrode connections
- a loudspeaker
- three electrodes
- a computer

The system setup is simple and straightforward due to the compact nature of the equipment. It can be set up in clinics where the clinician and the client are in separate rooms, as can be seen in the pictures below. The entire system can also be set up in the same room.

Will the test be easy to conduct?

NAL-ACA is designed to be used in a clinical setting, and therefore the software interface has been developed to be as simple and easy to use as possible, making it straightforward for clinicians to conduct an assessment. The in-built statistical procedures assist the clinician in determining the presence or absence of a response, so that the test can be performed by clinicians who are not expert electrophysiologists.

Below are some screen shots showing a snapshot of acquisition and the final results:
HEARLab—an audiological test suite

HEARLab is a product concept of the HEARing Cooperative Research Centre and NAL, that is being commercially released by Frye Electronics. It is a versatile device that can be configured and controlled by a standard PC to fully control stimulus levels, signal pathways and response conditioning. With this approach, new hearing tests can be implemented entirely through new computer software modules, greatly reducing the time between test development and validation, and its application in a clinical setting.

NAL-ACA is the first test available to clinicians in the HEARLab test suite. Other assessment tools are currently under development by NAL and the HEARing CRC, and will progressively be released to increase the versatility and use of HEARLab for clinical application.

Sounds interesting, where can I get more information?

If you want to know more about NAL-ACA, please register your interest on NAL's website http://www.nal.gov.au. Additional information on development of new test modules is available at www.hearingcrc.org. For information on commercial sales of HEARLab, please contact Frye Electronics at www.frye.com.