

# Performing Neural Response Imaging (NRI)

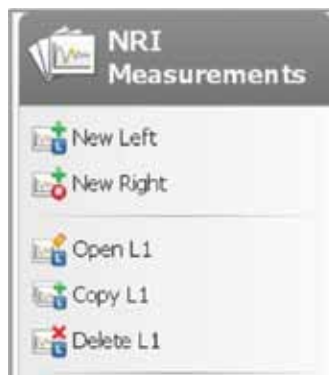
## □ Getting Started

Connect the CPI-3 programming device to any USB connector on the computer and connect the sound processor to it via the programming cable. Confirm that the fitting hardware (CPI, sound processor, and implant) are recognized as shown below.



## □ Choose the side on which to run NRI measurements

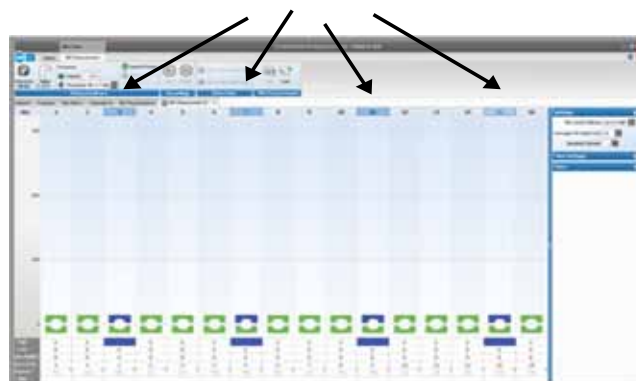
- Go to the NRI Measurements Tab
- Select New Left or New Right



**Note:** It is possible to open a copy of a previous NRI measurement, make changes as necessary, and run another measurement.

## □ Determine the electrodes to measure (stimulating electrode)

- Select the electrode number across the top of the NRI display



- SoundWave will use a default setting for recording electrodes that is 2 apical unless the stimulating electrode is at the apical end of the array

#### □ Set the High CU limit for each electrode

- Set the High CU level for any electrode. All selected electrodes' High CU level will be set at this value

**Note:** If running NRI on multiple electrodes, a quick way of setting High and Low CU limits is to:

- Select the desired electrodes
- Type in the High CU level and select "L" on the keyboard. This will set the High CU levels and move the focus to the Low CU level
- Type in the Low CU level and press enter. This will set the Low CU levels for the selected electrodes
- If the Low CU limit is set first, select "H" on the keyboard to move the focus to the High CU levels

#### □ Set the Low CU limit for each electrode

- Confirm selection of desired electrodes
- Set the Low CU level for any electrode. All selected electrodes' Low CU level will be set at this value

#### □ Modify the desired number of data points, if desired

#### □ Select NRI Measurement Settings



##### Stim Level Ordering

- When performing NRI in the clinic, Low to High Stim Level Ordering is recommended
- Consider using High to Low Stim Level Ordering when performing NRI in the OR

##### Averages Per Data point

- Set the number of stimulus presentations that will be delivered and averaged at each stimulation level  
Averages Per Data Point can be changed as NRI is running

#### □ Remove the contralateral sound processor to avoid interference, if applicable

#### □ Select Start in the Ribbon Bar

- Make adjustments to NRI while it is running, if desired. For example, it is possible to raise stimulation levels by simply selecting the stim marker and moving it accordingly. NRI will not stop until it has measured any changes made

**Note:** SoundWave allows the setup of NRI measurements on additional electrodes even while NRI is already running on another electrode.

#### □ Save the NRI Measurement(s)

- Select Save in the Ribbon Bar

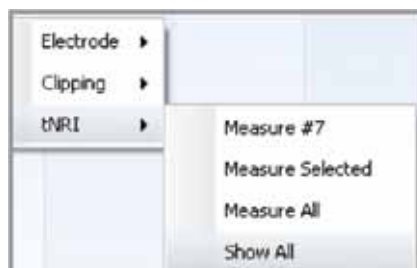
**Note:** It is also possible to make additional measurements after NRI has stopped; simply make the desired changes, and then select Start. NRI will measure only the affected electrodes and automatically add the measurements to those already taken.

## □ Use Interpolation to Create Programs Based on NRI

- After completing NRI, go to the Programs Tab
- Select New Right, New Left, or New Bilateral from the Action Pane to open a new program



- If tNRI values are not displayed in the program tab, perform the following steps:
  - Right-click on any electrode
  - Select tNRI – Show All



**Note:** By default, tNRI values will not display in a program tab; however, this can be changed in Preferences.

- Select Live Speech or Tone Burst from the Stimulation Task Group in the Ribbon Bar



- Set M levels for electrodes with tNRI measurements
- Right-click on any electrode and select Interpolation – Enable All



- Select Yes when a pop-up window is displayed asking if you would like to only interpolate zero value channels
- Lower the volume control on the sound processor or reduce M levels globally, select Live Speech stimulation, and select Start
- Gradually increase volume control or M levels to user settings

**Note:** M levels may be set initially at the more conservative 10–20% below tNRI. After verifying comfort at the initial setting, increase M levels while monitoring performance.

- Verify settings (using Ling Sounds, for example)
- Select Save from the Program Task Group in the Ribbon Bar

### ☐ Create Additional Programs Based on NRI

- Use the following recommendations for creating programs using the data obtained using NRI

#### **If tNRI is <200 CU:**

Program 1: M levels set to tNRI

Program 2: M levels set to 20% above tNRI

Program 3: M levels set to 40% above tNRI

#### **If tNRI is between 200–300 CU:**

Program 1: M levels set to tNRI

Program 2: M levels set to 10% above tNRI

Program 3: M levels set to 15% above tNRI

#### **If the behavioral M level is significantly higher or lower than tNRI:**

Create programs with gradually adjusted M levels (set to level of ESRT or tNRI) with the Volume Control set to -50/0% and monitor performance.

**Note:** If tNRI cannot be measured, set M to behavioral levels obtained. If there are no reliable behavioral measures, contact AB for assistance.