

# QUICK GUIDE

## ■ ■ ■ ACT TEST

The GSI AudioStar Pro™ and GSI Pello™ operating manuals contain information pertinent to the use of the audiometers. This includes safety information, as well as maintenance and cleaning recommendations. Read the manual in its entirety prior to use of the audiometer on a patient.

### TEST DESCRIPTION

The Audible Contrast Threshold (ACT) test is a clinical test measuring binaural spectro-temporal modulation sensitivity to quickly quantify a person's real-world ability to understand speech-in-noise. The patient's task is to discriminate between spectro-temporally modulated noise and non-modulated noise. The ACT test results have good correlations with aided speech-in-noise performance and act as a language independent proxy (substitute) for a speech-in-noise test.

### TEST REQUIREMENTS

To perform the ACT test the following is required:

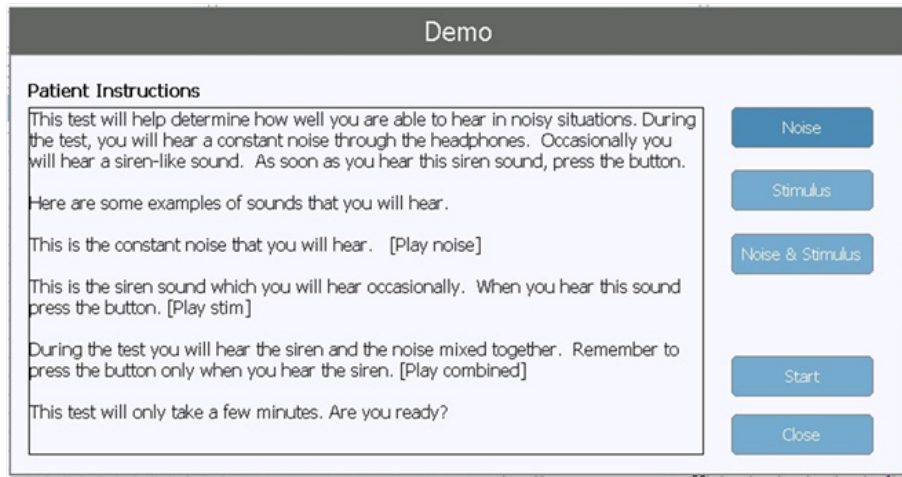
- Audiometer icensed for the ACT test
- Patient Response Button
- Transducers (inserts, earphones or circumaural headphones)
- Stored air conduction pure tone thresholds at the required frequencies in both ears

### PREPARE THE PATIENT

1. Ensure air conduction pure tone thresholds have been obtained bilaterally at the required frequencies of 250, 500, 1000, 2000, and 4000 Hz (minimum). Additional frequencies may also be tested.
2. Press the More Test Type Button.
3. Use the on-board navigation buttons or an external mouse to select the ACT test from the displayed menu.  
**NOTE:** "Insufficient data to complete the test" will appear if any of the required thresholds are missing from the audiogram.
4. The Patient Instructions dialog will appear to assist the clinician (See figure 1 on next page). Instruct the patient as to what sounds they will be hearing. Demonstrate the Noise alone, Stimulus alone (siren sound) and combined Noise and Stimulus so the patient has a clear understanding of the task which is to press the button when they hear the 'siren' sound.



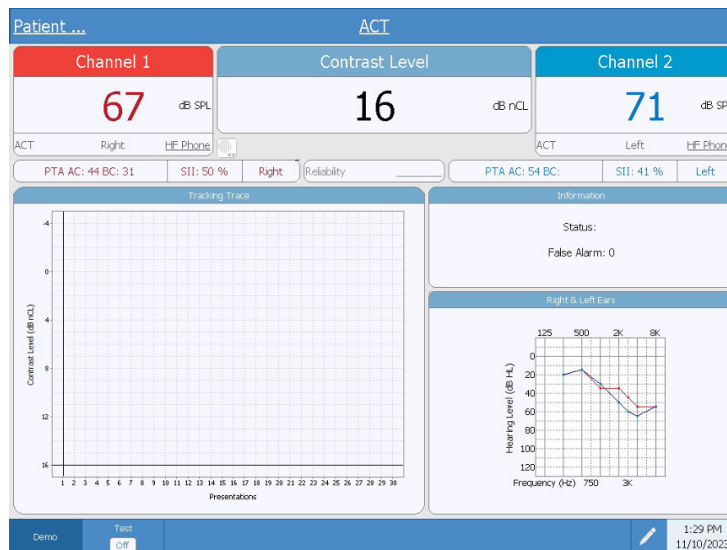
FIGURE 1



## PERFORMING THE ACT TEST

1. Begin the ACT test by using the on-board navigation buttons to select the Start button in the Patient Instructions dialog.
2. When the test is started, the patient will continuously hear the noise stimulus at a level that is based on their audiometric thresholds. In the example below, the noise is presented at 67 dB HL in the right ear and 71 dB HL in the left ear.

**NOTE:** The ACT noise level is fixed and cannot be changed by the examiner.



3. Press the present bar to deliver the stimulus (siren sound) at the starting Contrast Level of 16 dB nCL, which refers to the maximum modulation depth and not a signal-to-noise ratio. The audiometer will automatically score the response on the Tracking Trace graph with a black circle if the patient correctly responds to the stimulus or a white circle if the patient did not respond to the stimulus.
4. If the patient heard the response go down in intensity by 4 dB steps presenting each time until the patient does not respond and a white circle is stored. Go up in 2 dB steps until the patient responds and down in 4 dB steps and continue (4 dB down, 2 dB up) until a 3 out of 5 criterion is met and the test automatically stops.

**NOTE:** To avoid patient fatigue, it is recommended the test be paused for a few minutes if an ACT threshold is not reached after 25 presentations.

5. The ACT threshold responses will be indicated by three green filled circles with the checkmarks with the actual threshold displayed in the Information panel. In the example, three responses were obtained at 2 dB nCL and the ACT Threshold is 2.7 dB nCL.





## RESULTS AND RECOMMENDATIONS

The most effective way to use the ACT value is within the hearing aid fitting software itself. This will optimize the adaptive features of a hearing aid such as noise reduction and directionality automatically. Hearing aid brands which will allow this are Oticon, Phillips, Bernafon, and Sonic.

1. Locate the patient's ACT threshold in the table below to determine next steps for the patients hearing aid settings and recommendations. In general, the higher the ACT score, the poorer predicted speech in noise performance and the more assistance from the hearing aid the patient will need to understand in noisy situations

ACT Score dB nCL	Contrast Loss	Predicted aided speech in noise performance	Fitting Advice
-4 to 4	Normal	Normal Range	Adaptive features set to minimum level – help preserve natural sound in all environments.
4 to 7	Mild	Mildly Poorer than Normal	Adaptive features set to slightly higher than minimum level – help preserve natural sound and improve speech understanding in the noisiest environments
7 to 10	Moderate	Moderately Poorer than Normal	Adaptive features set to slightly lower than the maximum level – help balance speech understanding while maintaining natural sound in moderately noisy environments
10 to 16	Severe	Severely Poorer than Normal	Adaptive features set to maximum level – help prioritize speech understanding in even the least noisy environments. Also consider streaming devices and communication training.

2. If the hearing aid fitting software does not have an option to directly input the ACT value, then adjustments based on the ACT value can be done manually. Hearing aids usually prescribe adaptive features such as noise reduction and directionality based on the patients' audiogram as well as other data inputted to the fitting software such as questionnaires and listening preferences.
3. Utilize the ACT threshold to counsel the patient:
  - Counsel patients on their prediction of how well they will cope in noisy situations.
  - Discuss listening and communication strategies for noisy environments.
  - Recommend assistive listening devices.

