

## Specifications

### Interactive AI™

#### *Graphical user interface for calculating the Articulation Index*

##### GRAPHICAL ENTRY:

###### AUDIOGRAM (hearing level dB HL versus frequency)

- ANSI dB HL audiometric calibration
- Normal hearing; sensorineural, conductive, and mixed hearing losses
- Air conduction puretone detection thresholds at 11 frequencies; numerical values displayed in boxes
- Bone conduction thresholds at 8 frequencies; numerical values displayed in boxes
- DNT (did not test)
- CNT (could not test) due to audiometer output limitation
- Monaural: right air/bone is red/orange, respectively; left air/bone is blue/aqua, respectively
- Binaural ("effective") audiogram displayed in green (accurate for pure sensorineural loss only)

###### FREQUENCY-GAIN CHARACTERISTIC (sound field dB SPL versus frequency)

- Gain at 20 frequencies
- Click on right ordinate labels to increase/decrease gain of flat frequency response
- Click on left ordinate labels to increase/decrease gain of user-chosen frequency response
- 6 dB/octave rising characteristic checkbox; click on left ordinate labels to increase/decrease gain
- Separate characteristics for right and left ears

###### ARTICULATION INDEX VERSUS SPEECH LEVEL (sound field dB SPL)

- Click on desired speech level (abscissa) to calculate the articulation index
- Shaded AI box indicates need to recalculate AI because the user has changed the display
- Use "clear" button to clear display

##### OUTPUT DISPLAYS:

###### ARTICULATION INDEX VERSUS SPEECH LEVEL (sound field dB SPL)

- Normal-hearing fixed reference (a fixed heavy solid curve)
- Right ear red, left ear blue, binaural green; curve from immediately preceding calculation is dashed
- Short vertical marker on curve indicates the AI value at the speech level selected on the abscissa
- Short marker turns red when speech is too loud ( $E < 1$ )
- AI factors V, E, F, and H displayed in box:
  - V indicates contribution of speech-to-noise ratio (or loudness of speech) to AI
  - E indicates contribution of excessive speech intensity to AI
  - F indicates contribution of the slope of the frequency response to AI
  - H indicates contribution of ear-generated distortions to AI
- SII (S3.5-1997) calculated using parameters comparable to those used for the AI

###### PERCENT-CORRECT SCORES VERSUS ARTICULATION INDEX

- Nonsense syllable score (Fletcher)
- Speech sound score (Fletcher)
- W-22 (VA compact disk version; values used here were taken from published data)
- Intelligibility (responses to difficult questions, Fletcher)
- Vertical red line cuts through curves at AI calculated for current condition