

WIDEX ALLURE™ AI RIC WITH CLARITY BOOST NEURAL BENEFITS OF NATURAL-SOUNDING AI DENOISING

Widex Allure AI RIC with Clarity Boost delivers benefits of natural-sounding AI denoising that go beyond speech understanding. In a laboratory study of speech-in-noise performance, participants showed significantly reduced alpha-band brain activity, a neural signature of effortful listening, when Clarity Boost was activated relative to the Universal program. Notably, reductions in neural effort occurred even when speech recognition performance was already very good ($\geq 90\%$ understanding), demonstrating that the benefits of Clarity Boost extend to listening situations that are more realistic for supporting real-world conversations. These findings suggest that natural-sounding AI denoising can make listening in noisy environments less mentally demanding, supporting more comfortable and less fatiguing communication.

Key findings

Study participants using Widex Allure AI RIC showed the following benefits with Clarity Boost over the Universal program:

- Significantly reduced neural indicators of listening effort when listening to speech in complex background noise.
- Maintained reduced neural listening effort even in conditions where speech-in-noise intelligibility was high ($\geq 90\%$).

Methods

- 18 adult listeners with moderate-to-severe sensorineural hearing loss participated in the study.
- Electroencephalography (EEG) was used to measure² brain activity as participants performed speech-in-noise² testing in a cafeteria background noise with Allure AI² RIC in Clarity Boost vs. the Universal program.
 - EEG activity in the alpha frequency band (7–14 Hz)² is considered a neural indicator of listening effort.
- Two listening conditions were tested:
 - Challenging listening condition (50% correct² threshold, SRT50) with target speech at the sides.
 - More realistic listening condition (90% correct² thresholds, SRT90) with target speech at the sides.

Results

- Alpha-band EEG activity aligned with the listeners'² subjective impressions of easier and more comfortable² listening for the Clarity Boost program over the² Universal program.
 - Alpha-band EEG power was significantly reduced² by Clarity Boost in challenging listening conditions² (SRT50), where participants achieved 20.5% better² word recognition with Clarity Boost (Fig. 1).
 - Alpha power was also significantly reduced by² Clarity Boost in more realistic listening conditions² (SRT90), where recognition performance was² equal between programs, but participants rated² listening as easier and more comfortable with² Clarity Boost.

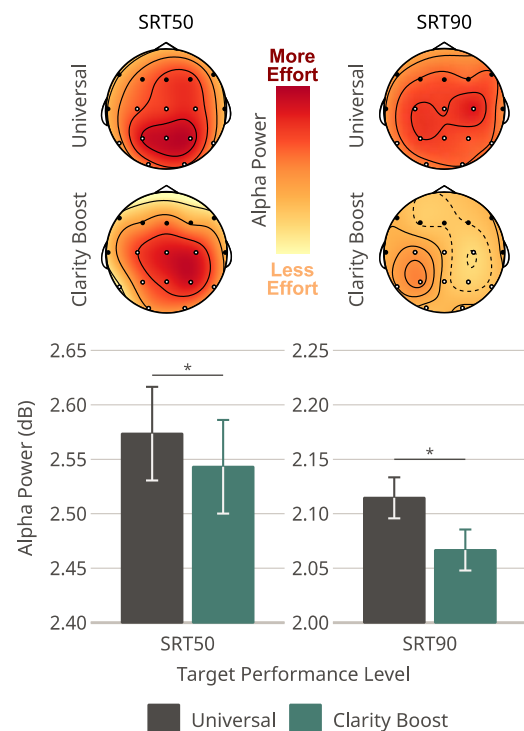


Figure 1: Head maps (top) and bar plots (bottom) showing alpha-band EEG activity measured at SRT50 and SRT90, where stronger alpha suggests greater listening effort.

Clinical implications

Widex Allure AI RIC with Clarity Boost provides users with natural-sounding AI denoising that reduces neural signs of listening effort, making conversations in noise feel less demanding.