

WIDEX ALLURE™ AI RIC WITH CLARITY BOOST

INTRODUCING 3<sup>RD</sup> GENERATION AUDIO-SPECIFIC AI:  
EXPRESSIVE. EFFICIENT. ENGINEERED FOR OPTIMAL BALANCE.

Driven by a true dedication to achieving an optimal balance between speech clarity and natural awareness of surroundings, Widex introduces Allure AI RIC with Clarity Boost, designed to deliver the most natural hearing experience for everyday use, while empowering users to activate a dedicated AI co-processor whenever more support in noise is needed. The superior performance of Clarity Boost was proven in a technical study evaluating output SNR in realistic sound environments, as well as processing delay. The results of the study clearly showed that Clarity Boost outperformed the other manufacturers, by achieving the highest average output SNR of all four competitors with AI-based denoising and the lowest average processing delay among competitors with a dedicated AI co-processor.

**Key findings**

By combining a highly efficient audio-specific AI architecture with perceptually motivated training, Clarity Boost achieves superior denoising while preserving those sound features that are important for human perception.

In a technical study, Clarity Boost delivered:

- The highest average output SNR of all four premium competitors with AI-based denoising, showing up to 6.2 dB improvement relative to competitors.
- The lowest average processing delay among hearing aids with a dedicated AI co-processor.

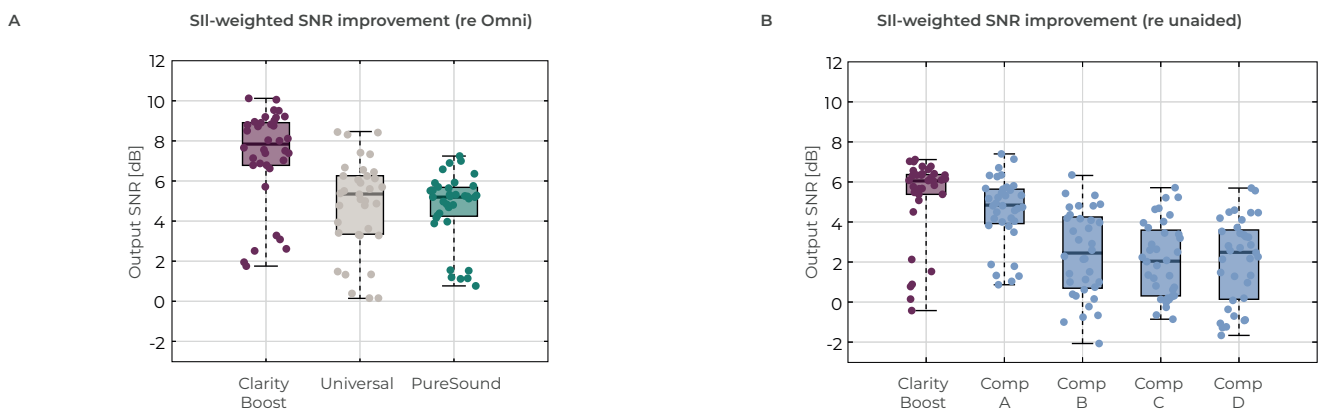
**Methods**

Performance of Allure AI RIC with Clarity Boost was compared to all four premium competitors with AI-based denoising.

- The signal-to-noise ratio (SNR) at the output of the hearing aid was obtained for six realistic sound scenes at three realistic input SNRs (0, +3, +6 dB).
- Processing delays were measured in an acoustic test chamber for each hearing aid.

**Results**

- Clarity Boost achieves a maximum output SNR of 10.1 dB relative to omnidirectional settings and up to 5.1 dB improvement in output SNR relative to Universal (Fig. 1A).
- Clarity Boost delivers the highest average output SNR of all four competitors across the six realistic sound environments, achieving up to 6.2 dB improvement relative to competitors. (Fig. 1B).
- Clarity Boost delivers the lowest average processing delay among hearing aids with a dedicated AI co-processor, managing to not exceed the critical 10-ms threshold.



**Figure 1:** SII-weighted output SNR (dB) relative to omnidirectional settings (Fig. 1A) and relative to unaided (Fig. 1B). Each boxplot shows the median output SNR, as well as 25<sup>th</sup> and 75<sup>th</sup> percentiles (bottom and top edges of the box, respectively). The whiskers extend to the highest and lowest output SNR. The filled circles depict all 36 measured output SNRs for each hearing aid/program (six sound scenes, three input SNRs, left and right ear).

**Clinical implications**

Widex Allure AI RIC with Clarity Boost gives users additional support in noise, while preserving a balance between superior noise attenuation and sound quality.

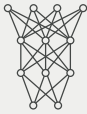
# WIDEX ALLURE™ AI RIC WITH CLARITY BOOST

## A NOVEL APPROACH TO AI-BASED DENOISING

Allure AI RIC with Clarity Boost features a dual-chip architecture, combining the Allure W1 chip with a dedicated AI co-processor, accessible on demand via the Clarity Boost listening program (Figure 2). This is because at Widex, we believe that even the best AI technology should work in partnership with the wearer.


Engineered for optimal balance, Allure AI RIC introduces a third-generation approach to AI-based denoising that is characterized by two main elements of novelty:

### 1. Audio-specific AI architecture.

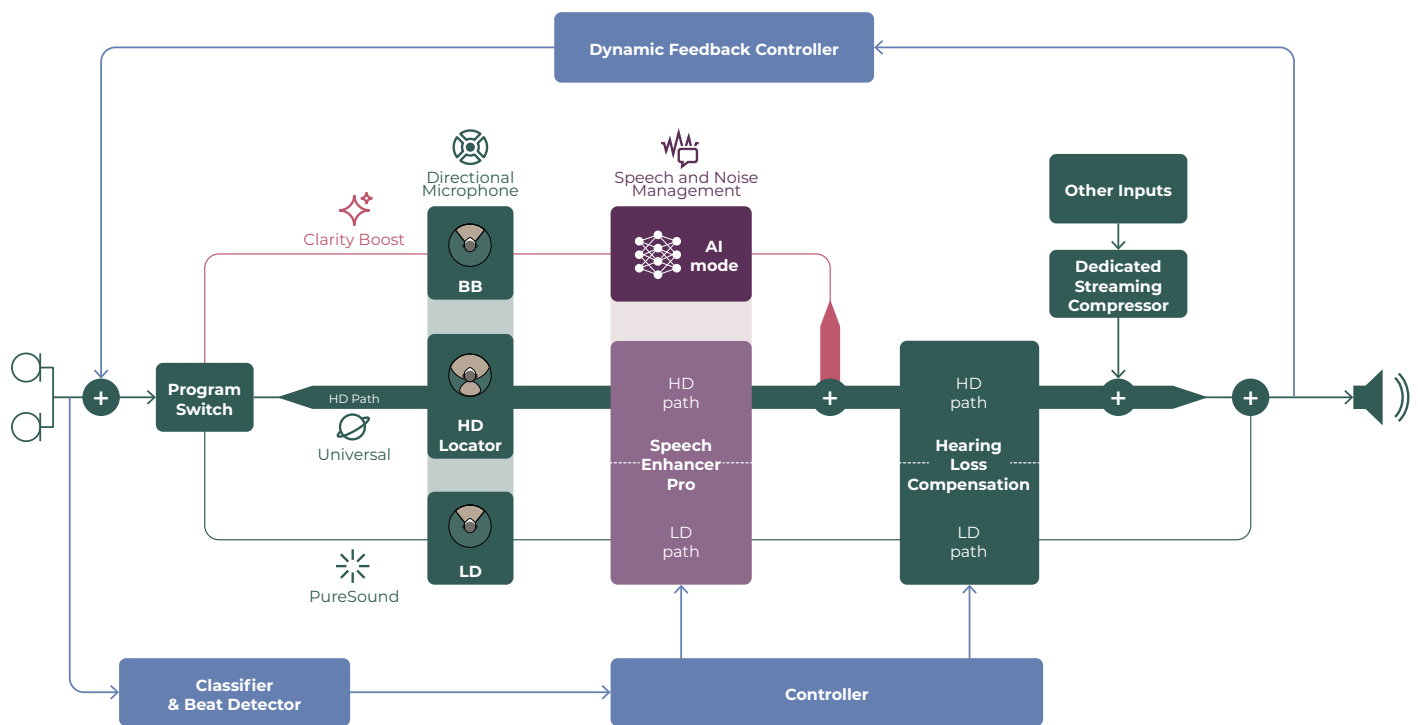


The DNN in Clarity Boost is built on an AI architecture specific to audio processing, using linear recurrent neural networks (L-RNNs). The L-RNNs are placed directly on the signal path, efficiently processing audio end-to-end. This third-generation approach achieves superior denoising while carefully balancing power consumption and processing delay.

### 2. DNN training guided by human perception.



The DNN in Clarity Boost was trained using a Large Audio Foundation Model to balance noise attenuation against perceptually relevant features of naturalness and sound quality. The result is that Clarity Boost can achieve superior denoising while preserving what is important for human perception (naturalness, sound quality, speech integrity, spatial awareness).



**Figure 2:** Illustration of the signal processing paths in Widex Allure AI RIC, for three listening programs: Universal (default), Clarity Boost (with the DNN included in "AI mode"), and PureSound.

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