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Neuro Sound Technology

Breaking the Sound Barrier

Amanda Wolfe, Au.D. Education and Training Audiologist



Hear better. Live better.

Webinar FAQs

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Learner Outcomes

1

Discuss the patient benefits of Genesis AI and Neuro Sound Technology features.

2

List at least two improvements in noise reduction implementation on Genesis AI.

3

List the new Streaming Sound options available within the fitting software or mobile app.



Uncompromising Sound.
Unrivaled Ease.

Impressive sound quality
with the industry's most
advanced processor
technology

Discreet design

**Industry-leading
battery life**



Industry's most advanced processor technology



Industry's longest lasting rechargeable battery in a RIC



Industry's smallest rechargeable RIC with a sensor



Industry's best dynamic range



Industry's smallest custom product

GENESIS^{AI}



Signature
SERIES

ALL
NEW



FIRST CUSTOM
RECHARGEABLE
CIC

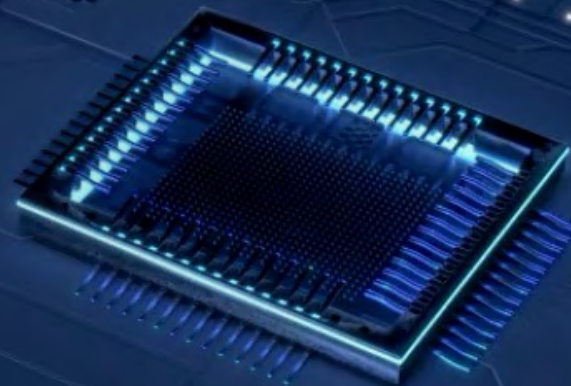
Starkey Neuro Processor

INDUSTRY'S

MOST

ADVANCED

PROCESSOR TECHNOLOGY



6X 10X

MORE
TRANSISTORS

MORE
MEMORY

4X

FASTER
PROCESSING



Sound Quality is Key



**Broader high frequency response
supports improved sound quality**

Comfort in noisy environments

Reduced listening effort

**Better resolution for Edge Mode+
environmental classification**

**Our Lowest Noise Floor –
Hearing aids sound quieter in quiet**

Neuro Sound Technology

Adapts more quickly to deliver
crystal-clear, transparent sound
quality to patients

80million

hearing adjustments every hour



Neuro Sound Technology

Additive Compressor



Outer Hair Cells

Provide frequency- and place-specific compressive amplification of the Basilar Membrane traveling wave

Very fast acting: 100-200usec

Loss of function:

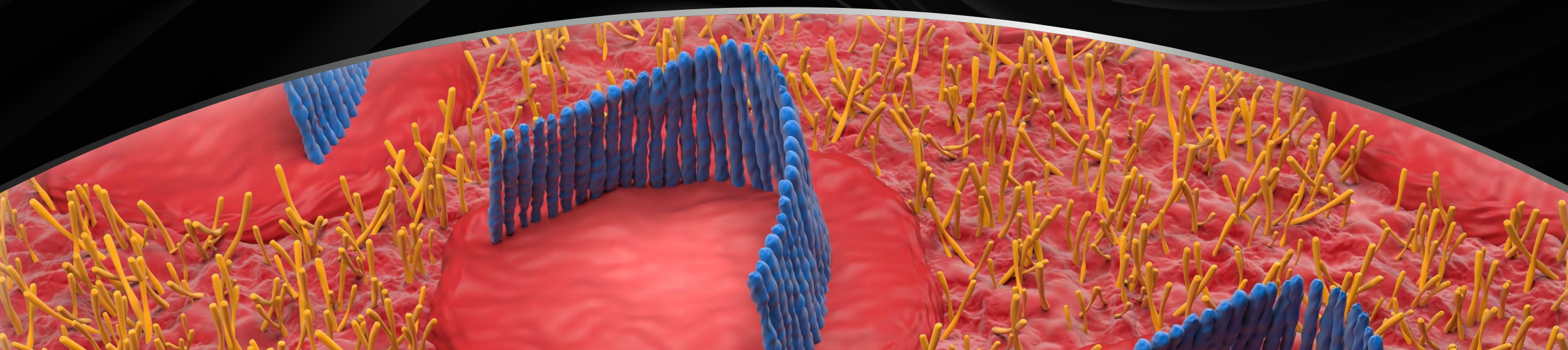
- Loss of sensitivity and frequency selectivity
- Loudness recruitment

Inner Hair Cells

Transform acoustic signals into neural patterns

Loss of function:

- Loss of sensitivity and signal resolution



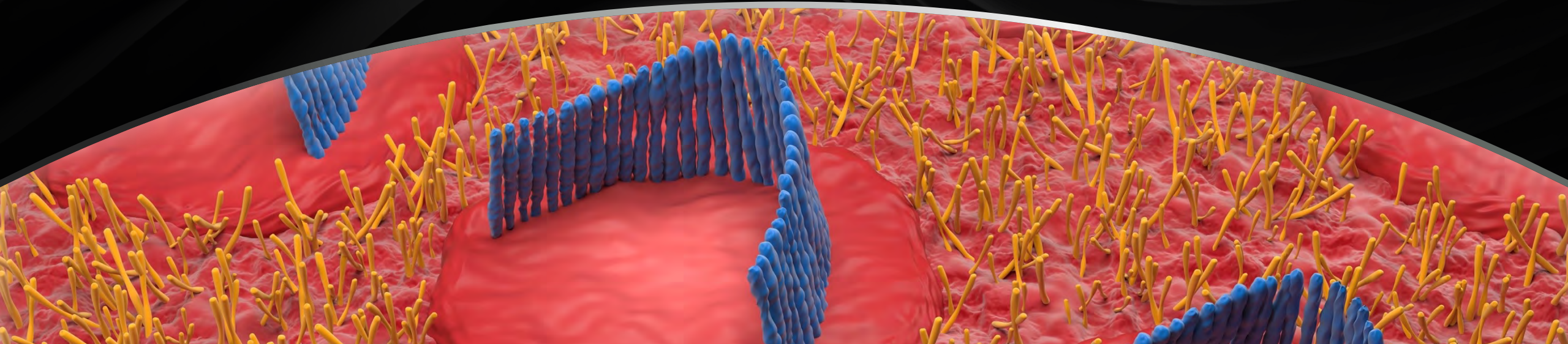
Compensating for Loss of Function

Outer Hair Cells

Fast compressive amplification

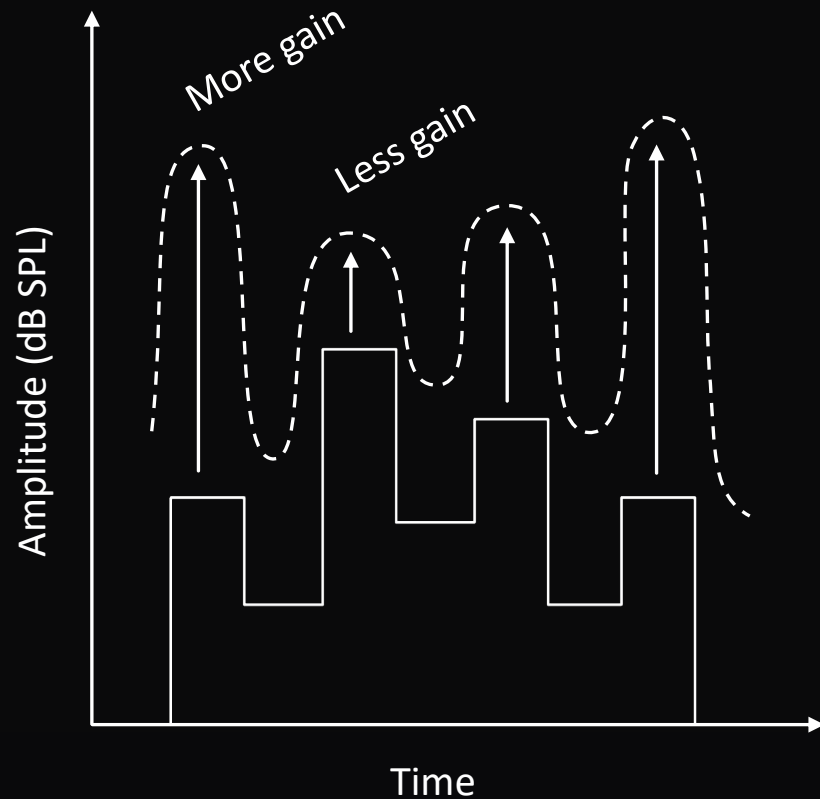
Inner Hair Cells

Amplification, via slow moving compression, to keep speech within the residual dynamic range

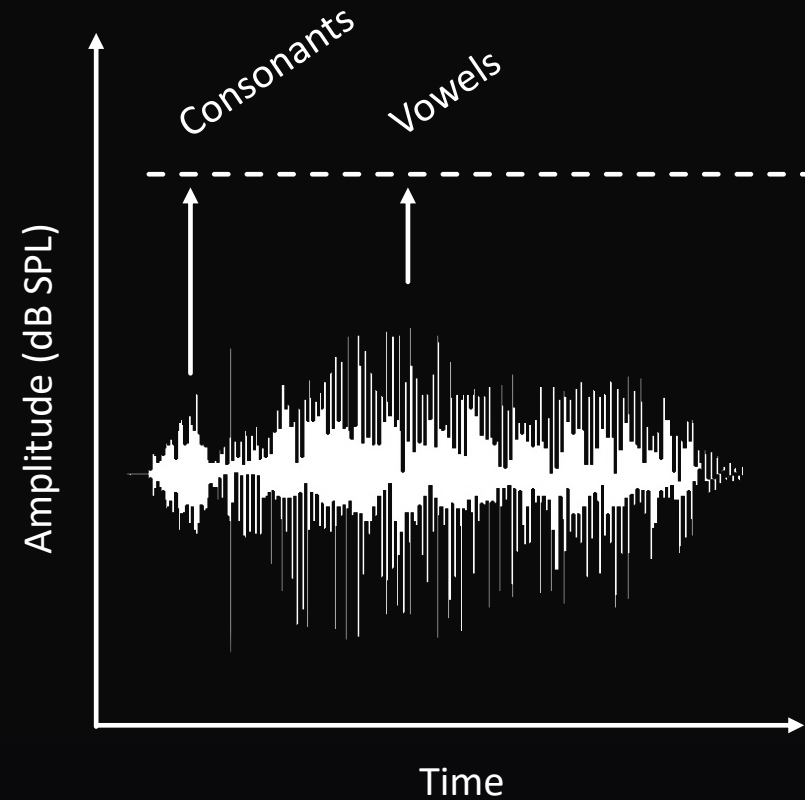


Additive Compressor

Slow Compressor



Fast Compressor



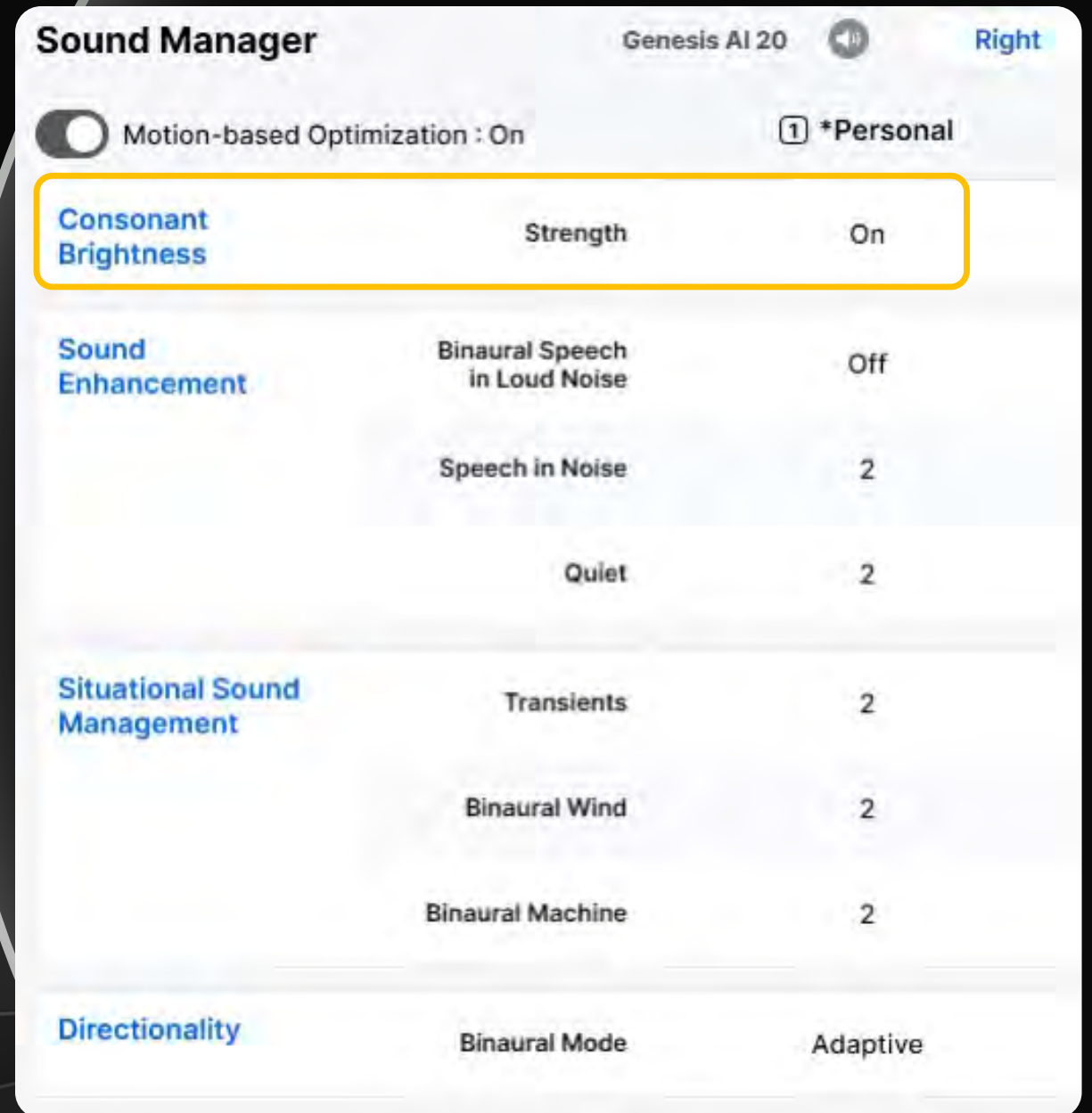


Consonant Brightness

Controls the Fast Compressor in the Additive Compression Architecture

ON/OFF control added to lower three technology tiers: 20, 16 & 12

Strength settings available on the 24 technology tier



Adjusting Consonant Brightness

If patient reports and **cannot accept** occasional hearing aid fluctuations or volume changes

May occur when a transient sound occurs in the presence of steady background noise

May be more common with greater degrees of hearing loss where fast compression gain changes are more substantial

24

TECHNOLOGY TIER

Try a different setting

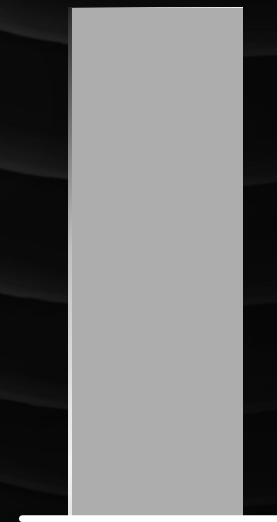
Turn OFF if necessary

20, 16 and 12

TECHNOLOGY TIERS

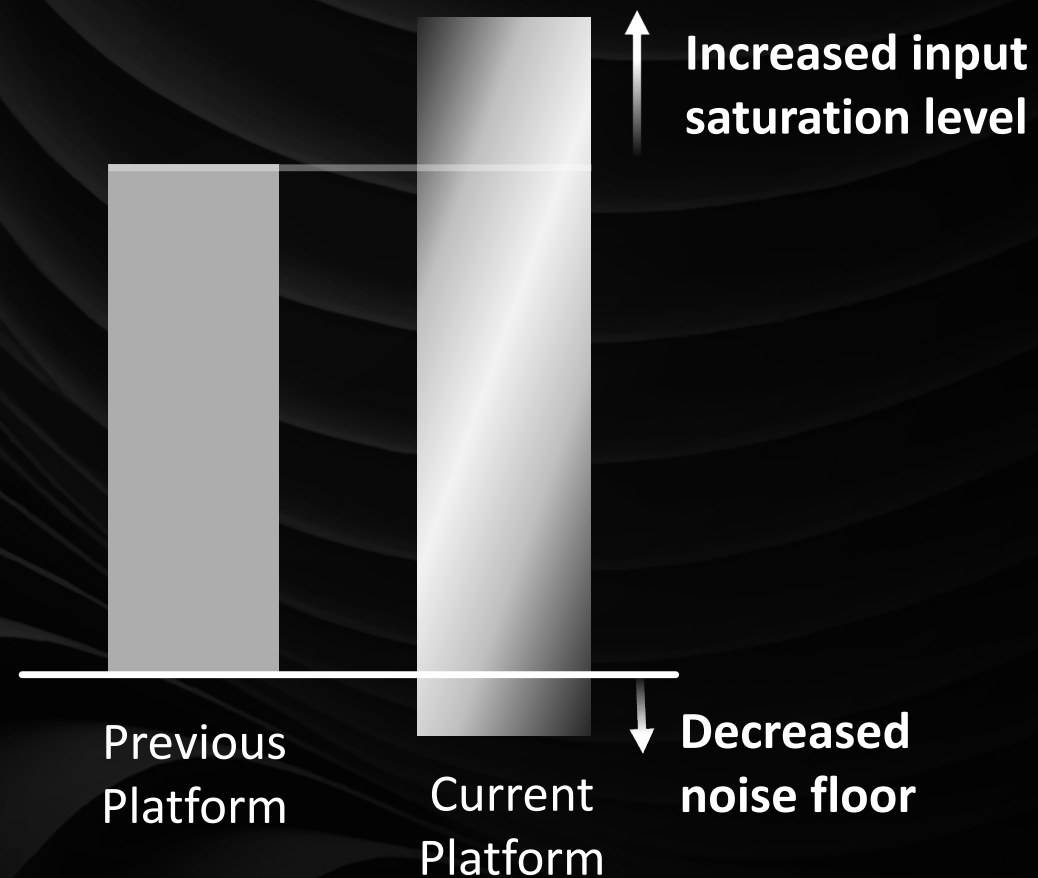
Turn ON/OFF

**20 dB Improvement
in Dynamic Range**

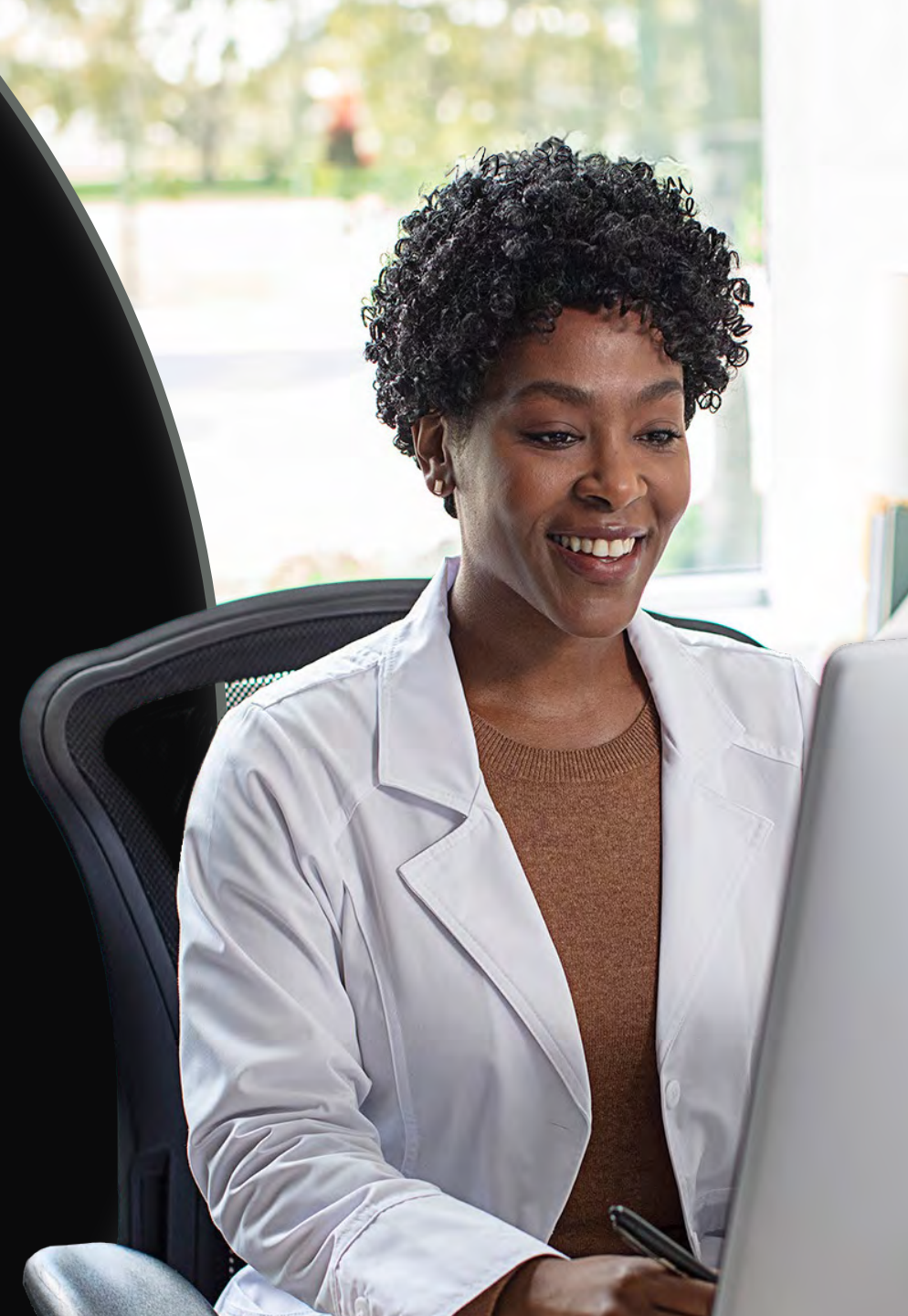


Previous
Platform

20 dB Improvement in Dynamic Range

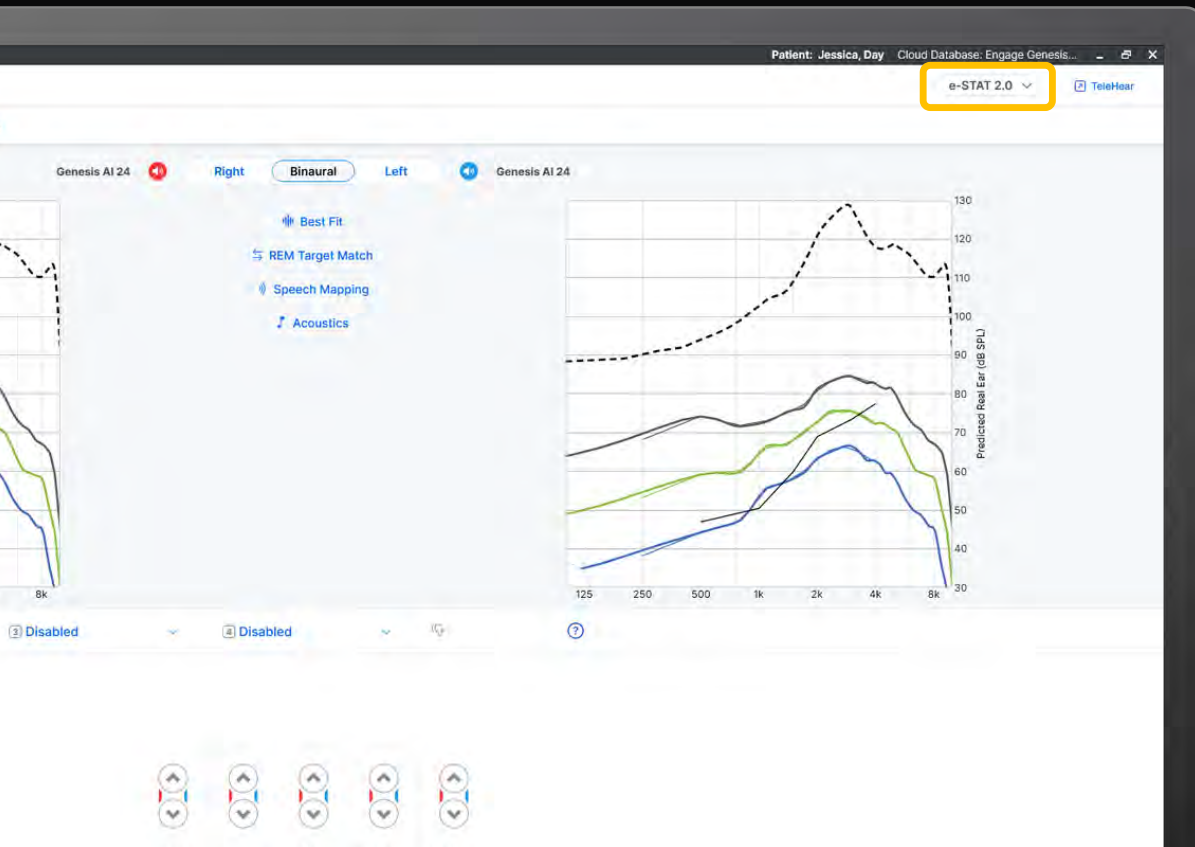


e-STAT 2.0



e-STAT 2.0

Proprietary Fitting Formula



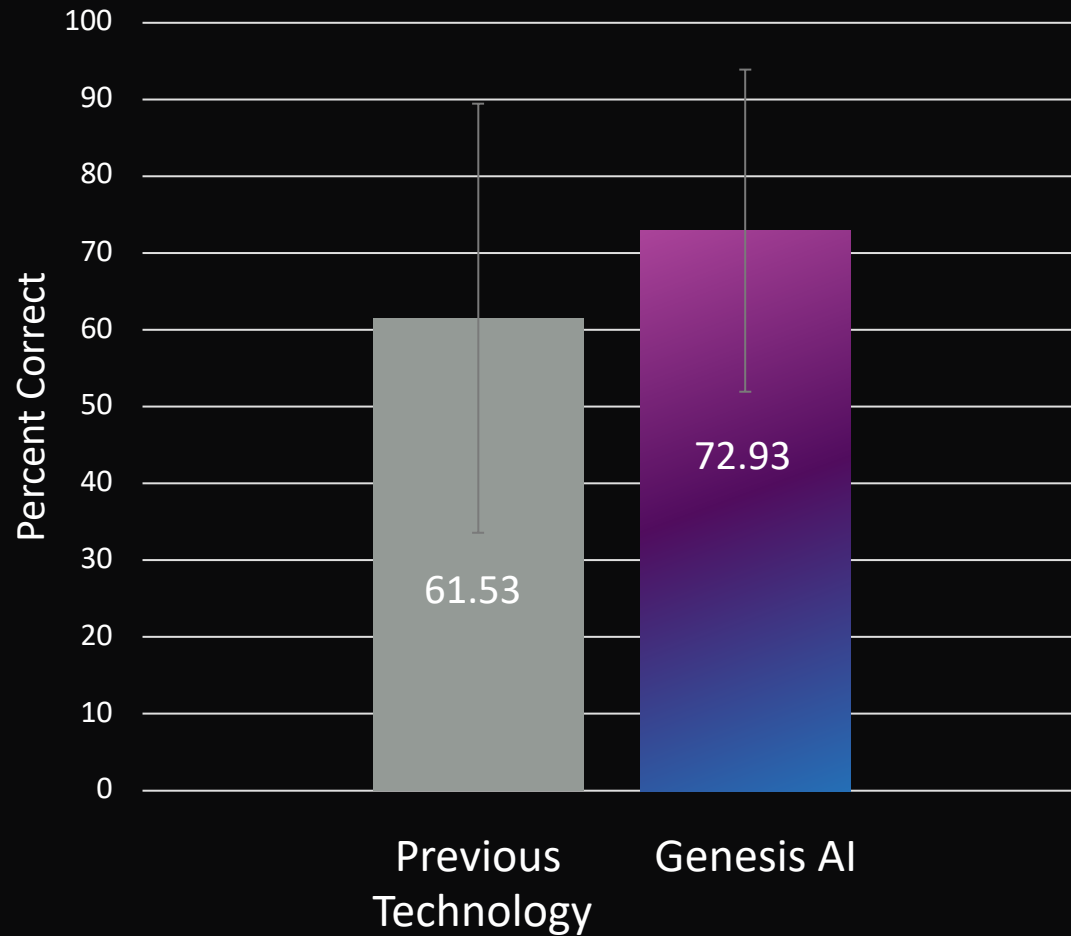
Emphasizes audibility for
speech understanding

Developed for Starkey's proprietary
compression architecture

Optimizes response modeling
regardless of hearing aid style

Optimizes vent
hearing aid interaction

Word Recognition for Soft Speech in Quiet



**10% higher speech
intelligibility scores**
soft speech vs. previous technology

Sound Quality Preference



84%

when listening to
speech in noise

A circular graphic with an orange-to-red gradient border, representing 84% of the circle.



93%

when listening to
speech in quiet

A circular graphic with a blue-to-purple gradient border, representing 93% of the circle.



Listeners rated Genesis
AI sound quality
**higher than
previous technology**

A large, dark grey circular graphic with a blue-to-orange gradient border, representing the overall finding.



Feedback Cancellation

Feedback Canceller

**Adaptation settings are audiogram
and acoustic-coupling dependent**

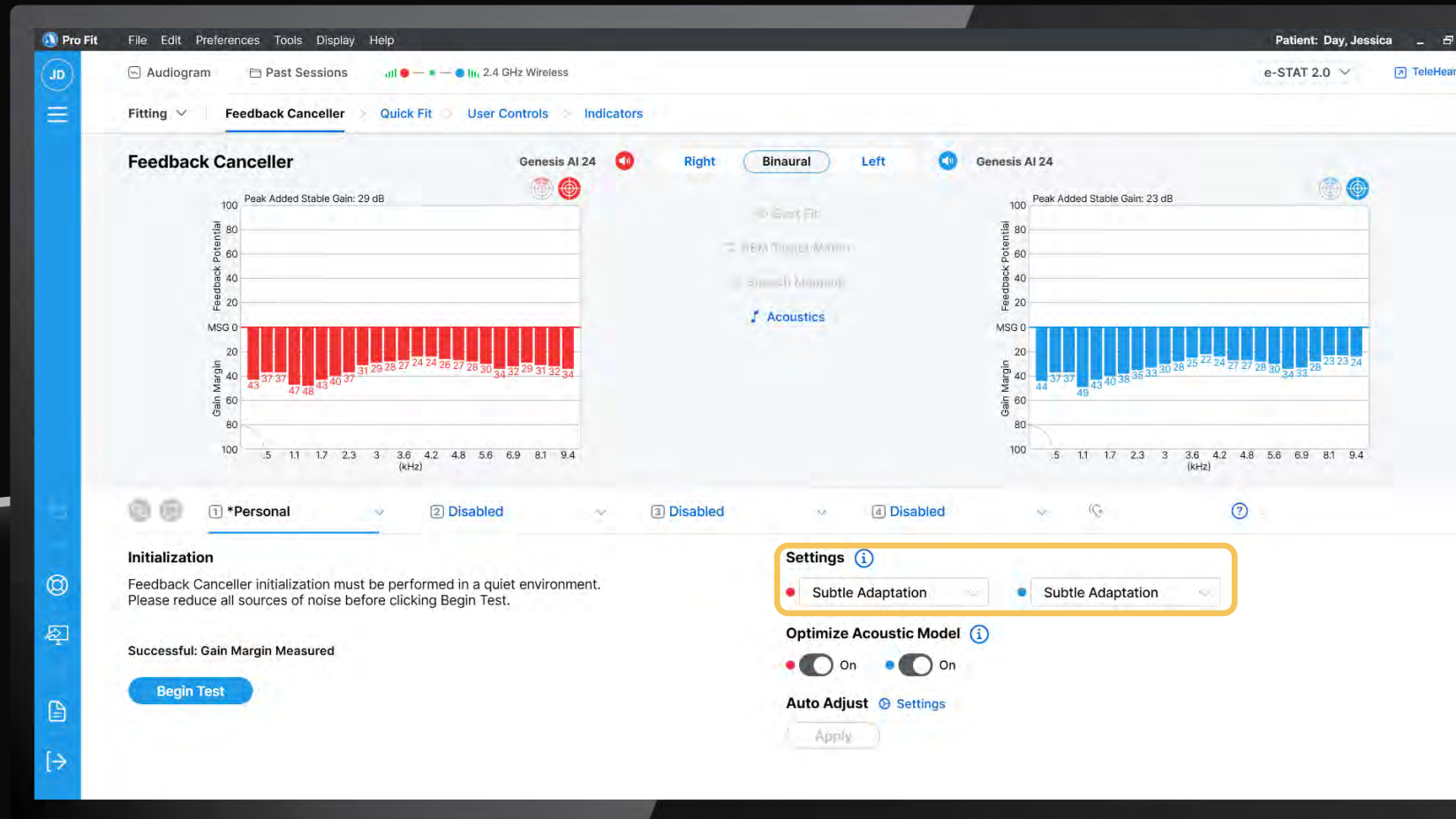
Customized performance based
on the patient's hearing loss



Feedback Canceller

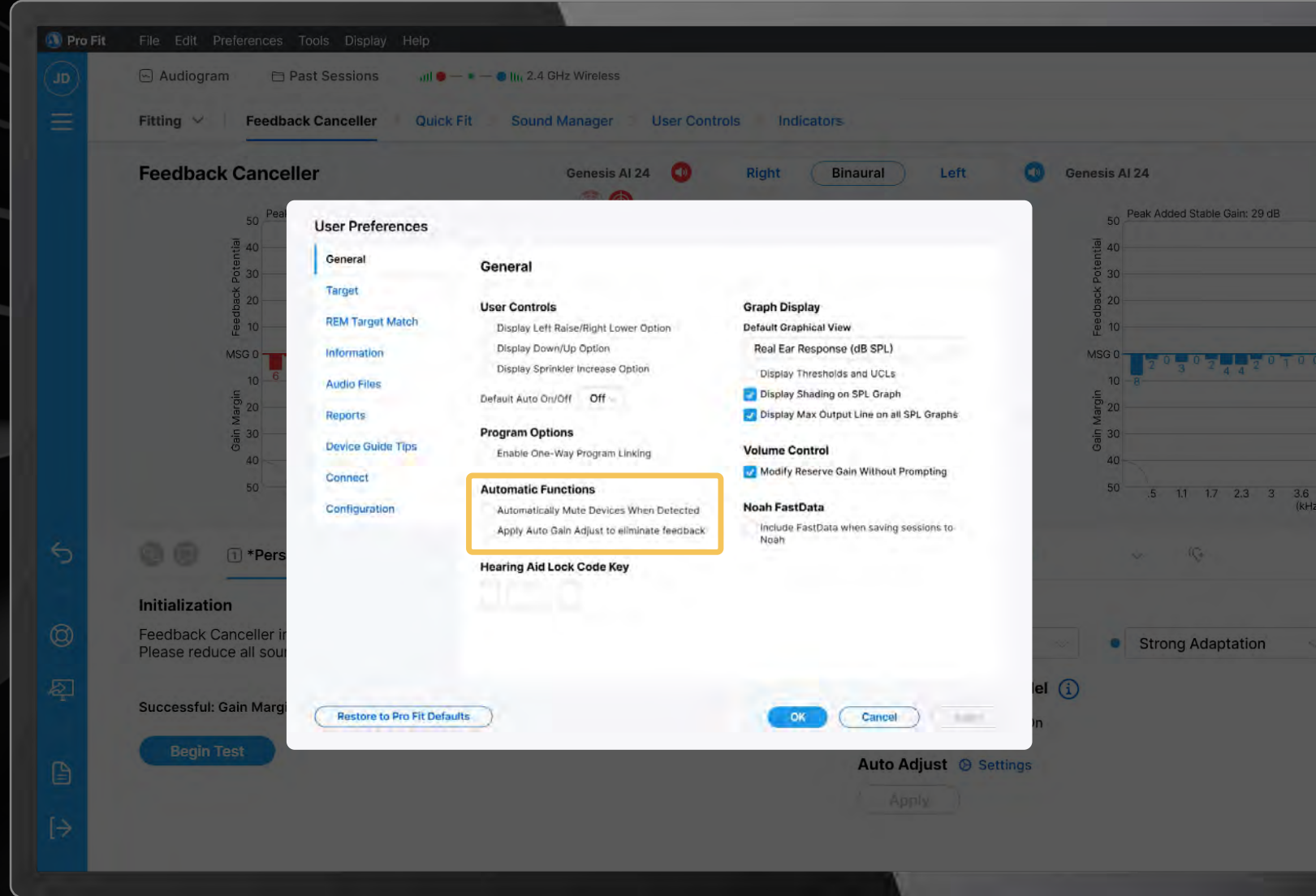
Adaptation Settings

- **Subtle** for large vent and open fittings
- **Strong** for smaller vents and occluded fittings



Feedback Cancellation

Additional Feedback Cancellation options to ensure your patients are achieving maximum audibility with no feedback



Optimize Acoustic Model

The screenshot displays the 'Feedback Cancellation' software interface for 'Genesis AI 24' hearing aids. The interface is split into 'Right' and 'Left' channels. The 'Right' channel shows a 'Peak Added Stable Gain: 29 dB' and a 'Feedback Potential' graph with red bars. The 'Left' channel shows a 'Peak Added Stable Gain: 27 dB' and a 'Feedback Potential' graph with blue bars. Both graphs have a 'Gain Margin' axis ranging from 0 to 100 dB and a frequency axis from 0.5 to 9.4 kHz. A central dialog box titled 'Vent Model Updated' asks: 'Vent model updated in the Right and Left hearing aids based on feedback test. Do you want to match the hearing aid frequency response to targets?' with 'Yes' and 'No' buttons. Below the dialog, the 'Initialization' section states 'The Feedback Cancellation test is successful. Gain Margin Measured' and includes a 'Begin Test' button. The 'Settings' section includes 'Optimize Acoustic Model' (set to 'On') and 'Auto Gain Adjust' (set to 'On').

Feedback Cancellation

Genesis AI 24 **Right** Binaural **Left** Genesis AI 24

Peak Added Stable Gain: 29 dB

Feedback Potential

MSG 0

Gain Margin

0.5 1.1 1.7 2.3 3 3.6 4.2 (kHz)

Vent Model Updated

Vent model updated in the Right and Left hearing aids based on feedback test. Do you want to match the hearing aid frequency response to targets?

Yes No

Initialization

The Feedback Cancellation test is successful. Gain Margin Measured

Settings

Optimize Acoustic Model (i)

Auto Gain Adjust

Apply

If we recommend a different vent model, you will have two options

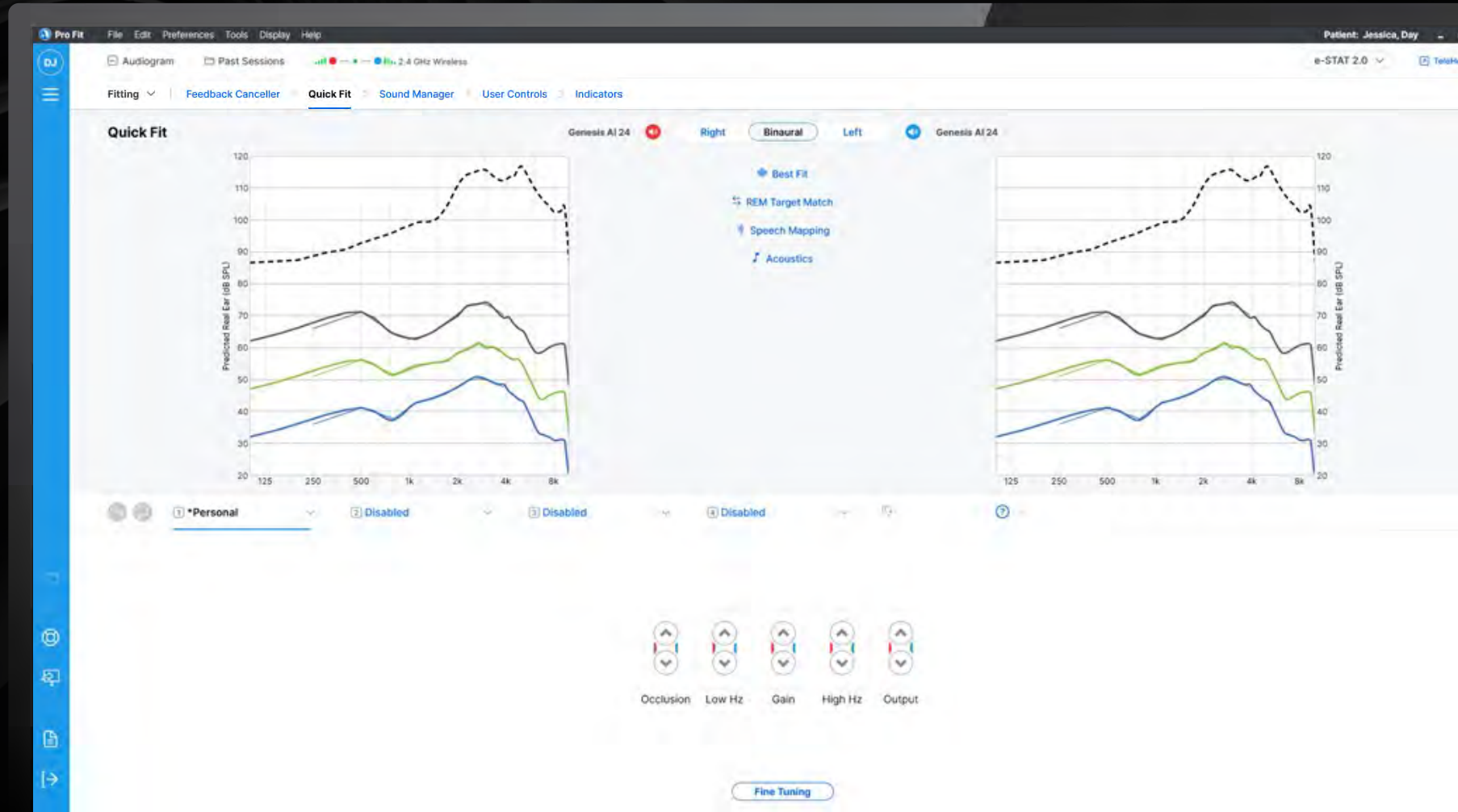
Starkey Pro Fit

Optimize Acoustic Model

Selecting No = Mismatch
in vent optimized targets
and frequency response

Selecting Yes = Vent
Modeled targets and
frequency response match

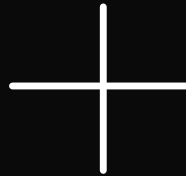
Undo = Will undo the update
to the vent optimized targets



Fitting Precision



Optimize Acoustic
Model



Feedback
Cancellation

Two unique features for personalizing the hearing aid fitting using the
Feedback Cancellation Initialization measurement

Noise Reduction





**Our best
sound quality yet**

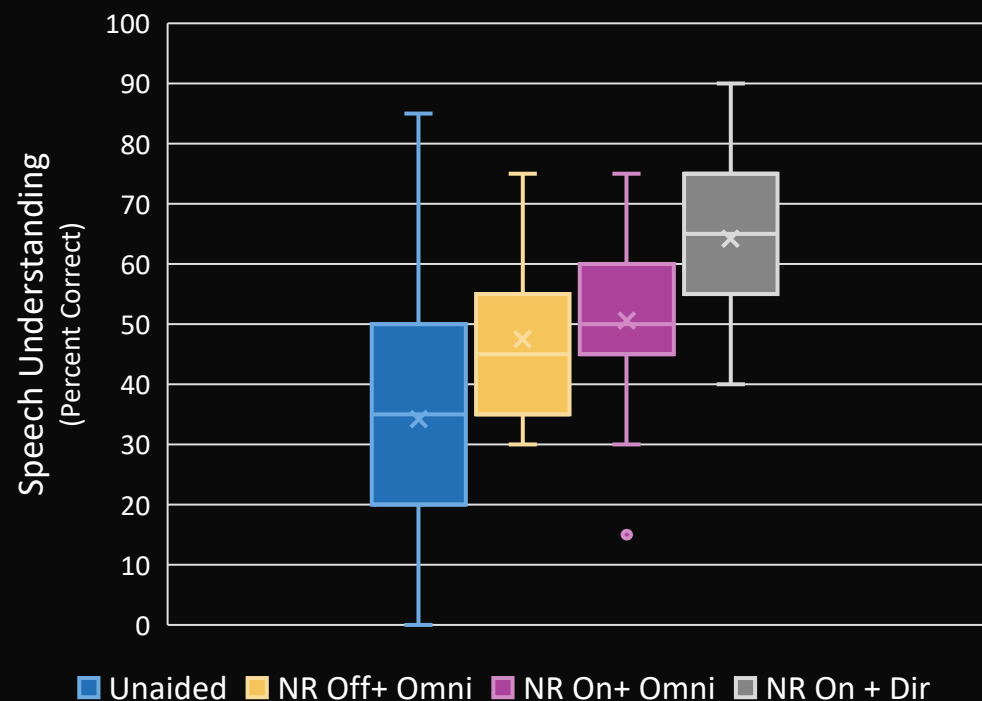
**Improved accuracy of
environmental sound
classification**

**Our fastest adaptation
to noise ever**

**Improved preservation
of soft speech**

Reduction in circuit noise

Speech Understanding in Noise



All pairwise comparisons were significant ($p < .001$)
EXCEPT Omni NR Off vs. Omni NR ON

30%

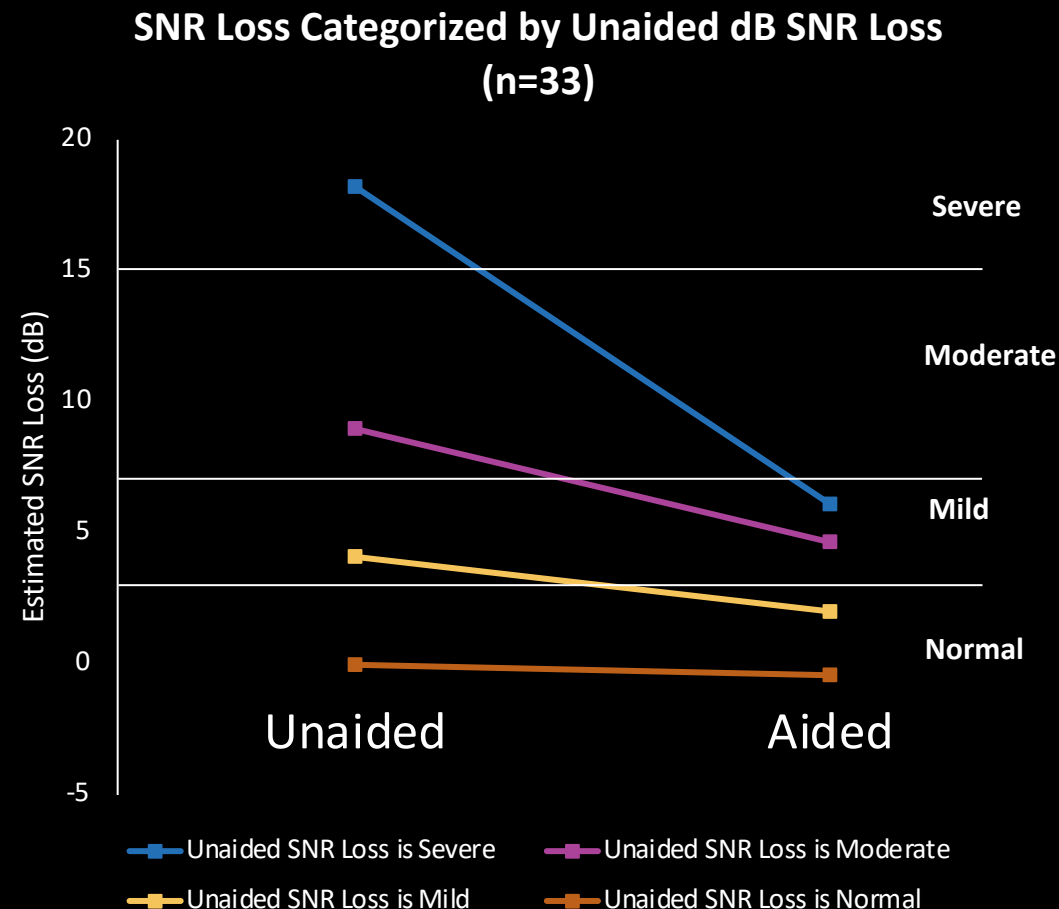
INCREASE
over unaided

Genesis AI Improves SNR Loss

QuickSIN (Killion et al., 2004)

Six IEEE sentences, each with five target words, at SNRs decreasing from 25 to 0 SNR in 5-dB steps

Speech (front) and Noise (rear)



Our Best Sound Quality Yet



Additive compressor



**20 dB improvement
in dynamic range**



**e-STAT 2.0
proprietary fitting
formula**



**Improved accuracy
of environmental
sound classification**



Edge Mode+





Edge Mode+

EXCLUSIVE
24, 20 & 16
TECHNOLOGY

On-demand real-time analysis of environments for advanced level of comfort and clarity

The best adaptation for any environment when engaged

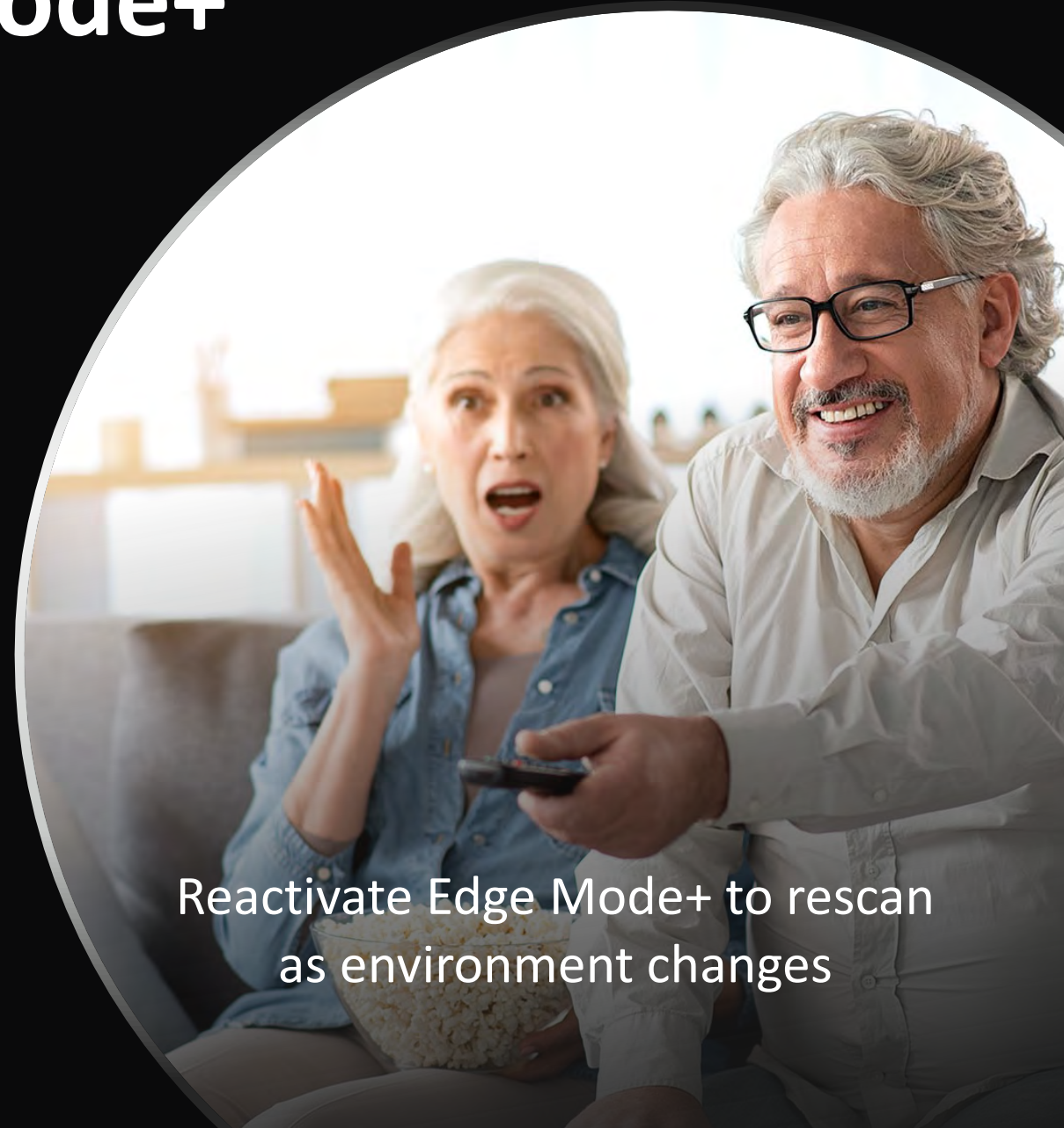
My Starkey patient-driven controls for listening intent

Exclusive to Genesis AI 24 & 20 Tiers

Edge Mode+



Activate Edge Mode+



Reactivate Edge Mode+ to rescan
as environment changes

EXCLUSIVE
24, 20, 16
TECHNOLOGY

EXCLUSIVE GENESIS AI
24
TECHNOLOGY



Edge Mode



**Automatic
Edge Mode+**



Automatic Edge Mode+

The industry's first-of-its-kind intelligent, on-demand noise management and comfort feature continues to scan, adapt, and optimize as the wearer changes environments or as the environment they're in changes

**Edge Mode+ will remain for the 20 & 16 technology tiers*

EXCLUSIVE
24
TECHNOLOGY

Automatic Edge Mode+

Continues to scan, adapt and optimize as the acoustic environment changes, ensuring the most appropriate settings are always applied in a dynamic world



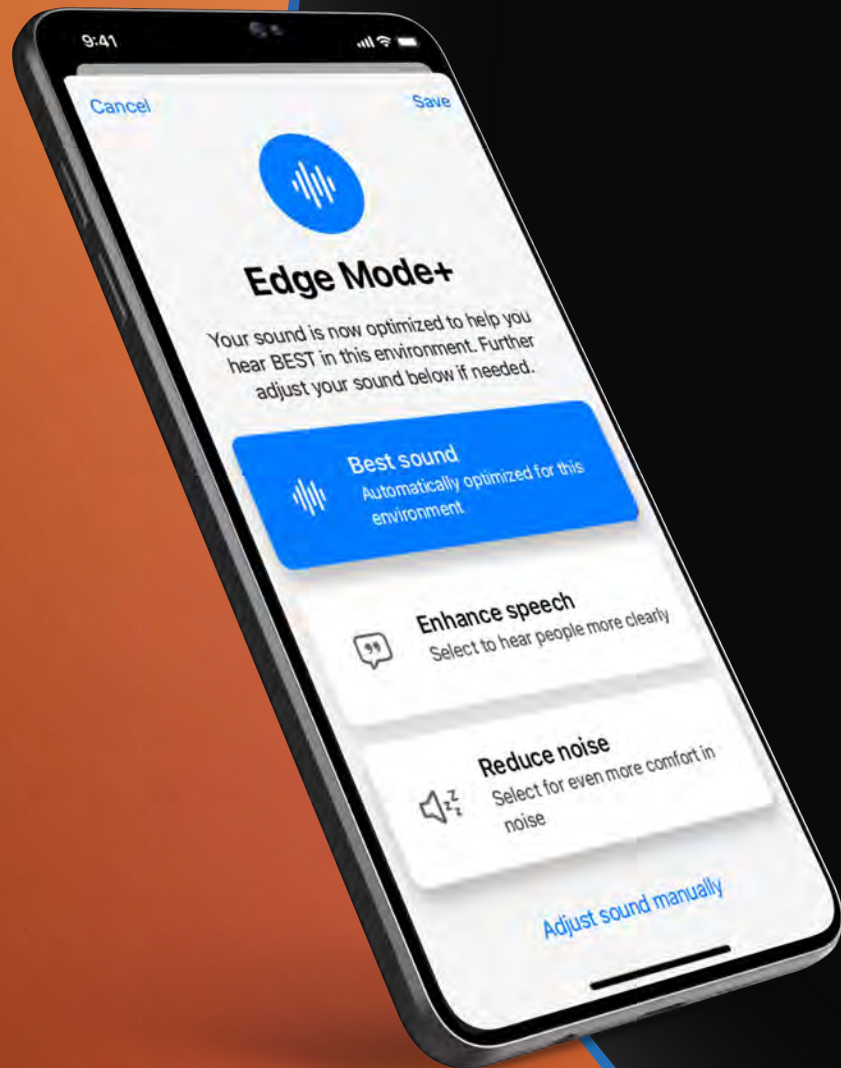
Activate Edge Mode+

Automatically rescans as environment changes

MyStarkey

Starkey's most intuitive
hearing aid mobile app





Edge Mode+

Patient-driven controls

Uses AI to optimize sound quality on demand, even in the toughest listening environments

Patient-driven controls for listening intent. Choose to enhance speech or reduce noise

EXCLUSIVE
24 & 20
TECHNOLOGY

Patient Driven Controls

Listening Intent

Best Sound

Automatically optimizes sounds for current environment

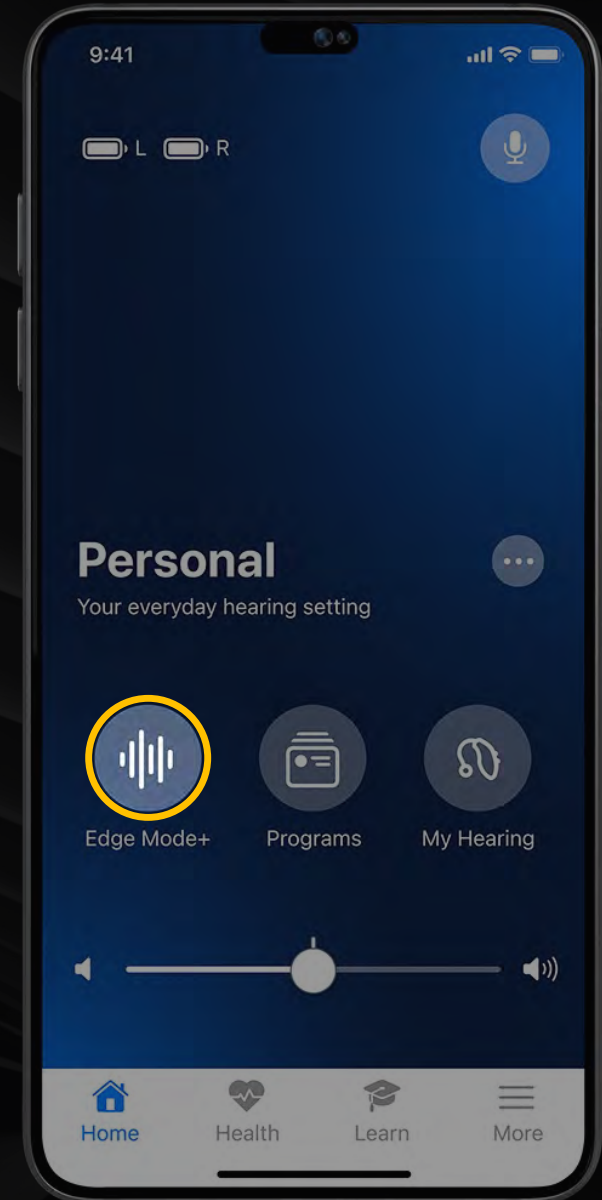
Enhance Speech

Tap to gain clarity and hear others more clearly

Reduce Noise

Tap to gain even more comfort by further reducing background noise

EXCLUSIVELY
24 & 20
TECHNOLOGY



Patient Driven Controls

Listening Intent

Best Sound

Automatically optimizes sounds for current environment

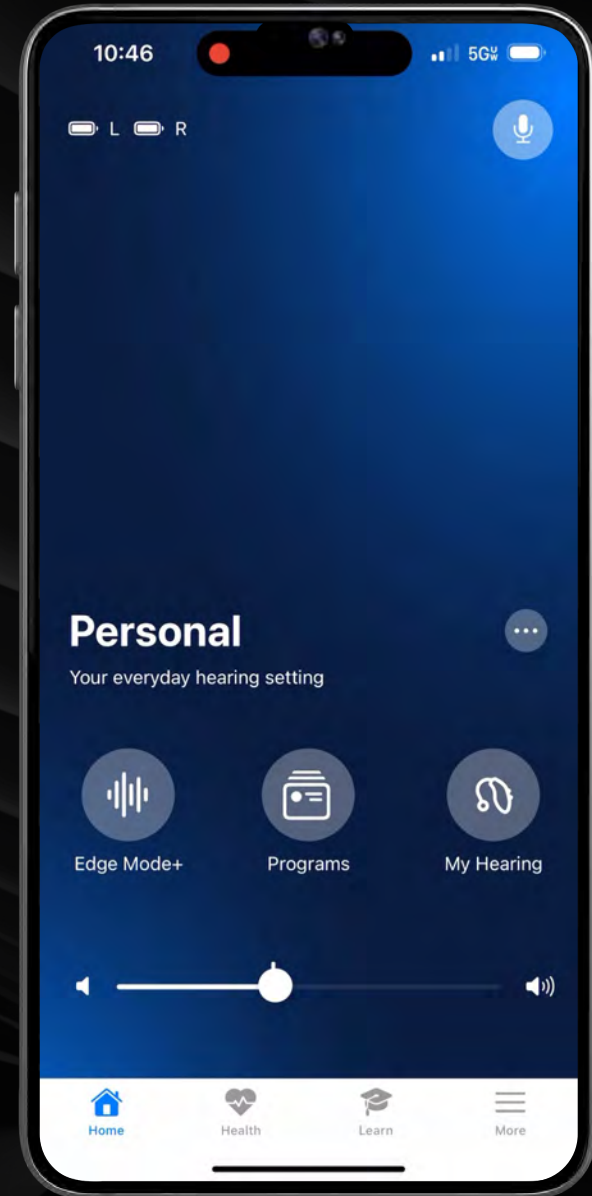
Enhance Speech

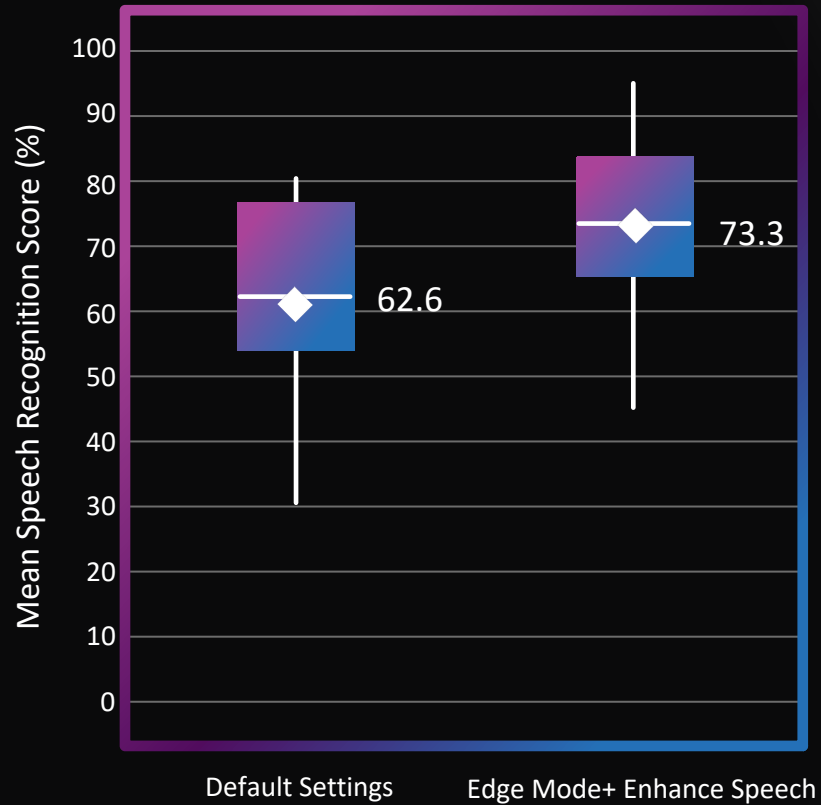
Tap to gain clarity and hear others more clearly

Reduce Noise

Tap to gain even more comfort by further reducing background noise

EXCLUSIVELY
24 & 20
TECHNOLOGY

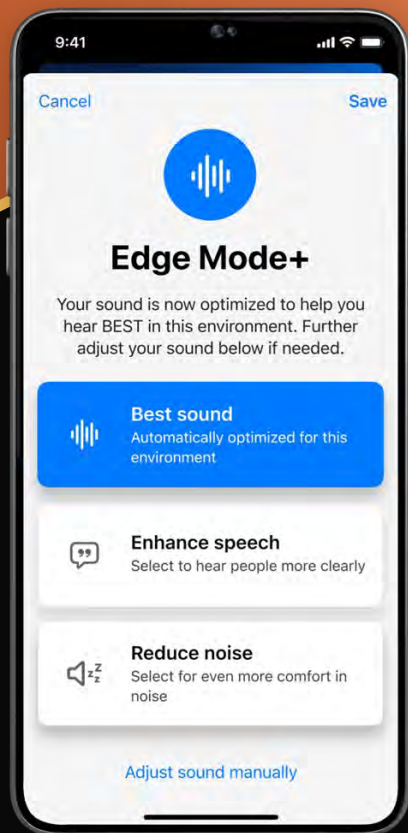




Improved Speech Recognition in Noise

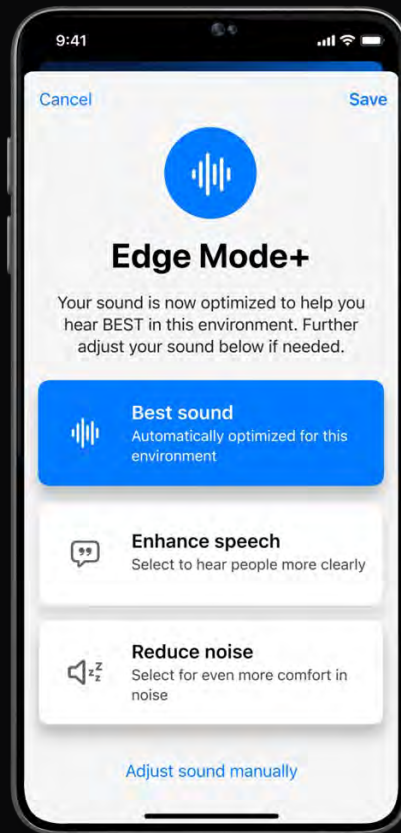
Edge Mode+ resulted in **significantly better speech recognition in noise** than default hearing aid settings

Edge Mode+ Tech Tier Differences



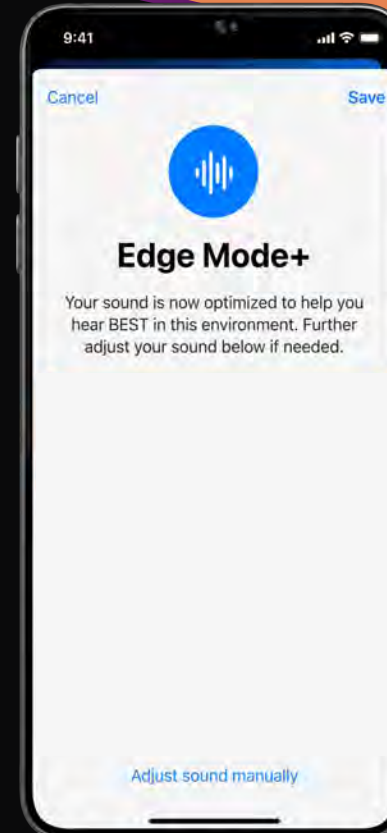
Genesis AI 24

Automatic Edge Mode+ with additional patient-driven controls



Genesis AI 20

Edge Mode+ with additional patient-driven controls



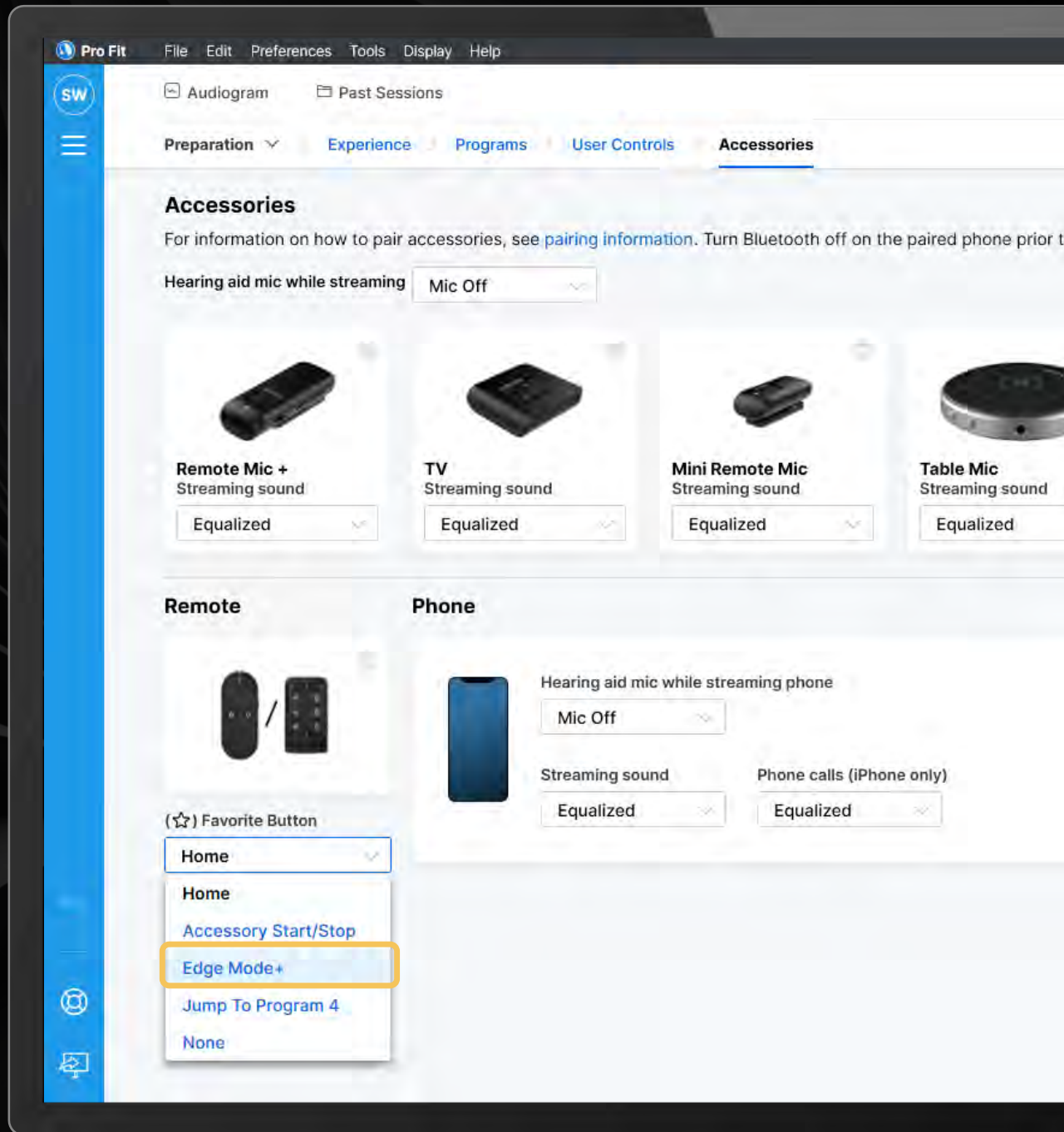
Genesis AI 16

Edge Mode+
No further adjustments available

Edge Mode+

Edge Mode+ can be engaged/disengaged with the StarLink Remote Favorite Button

EXCLUSIVE
24, 20 & 16
TECHNOLOGY



Motion-Based Optimization

NEW

Motion-Based Optimization

When activity-based motion, like walking or running, is detected, the microphones will switch to omni-directional to ensure more situational awareness and the best listening experience

EXCLUSIVE
24 & 20
TECHNOLOGY



NEW

Motion-Based Optimization

Small movements that impact the hearing aid placement, like chewing or putting on glasses or a hat, will activate our renowned feedback cancellation system to be at its most aggressive

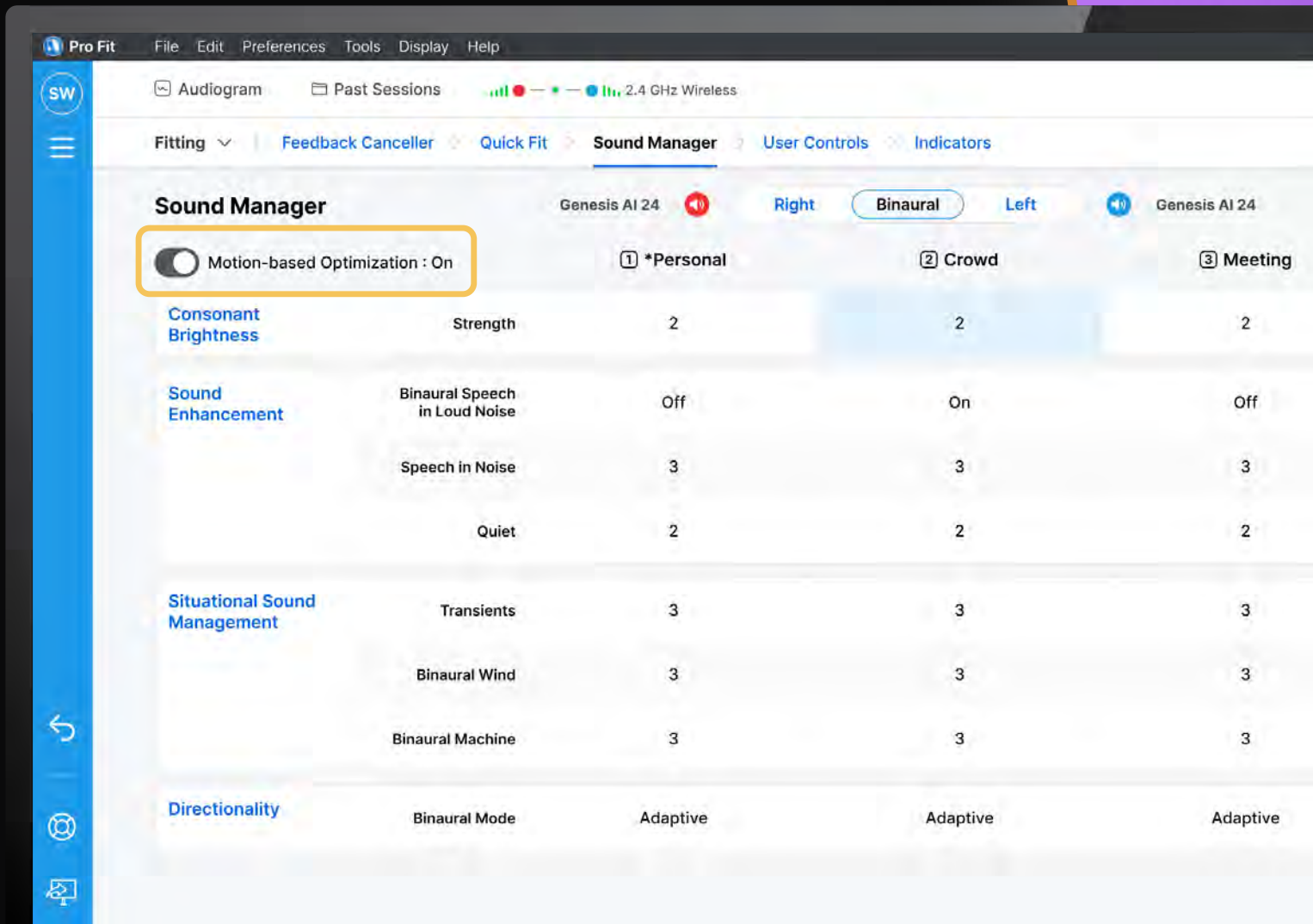
EXCLUSIVE
24
TECHNOLOGY

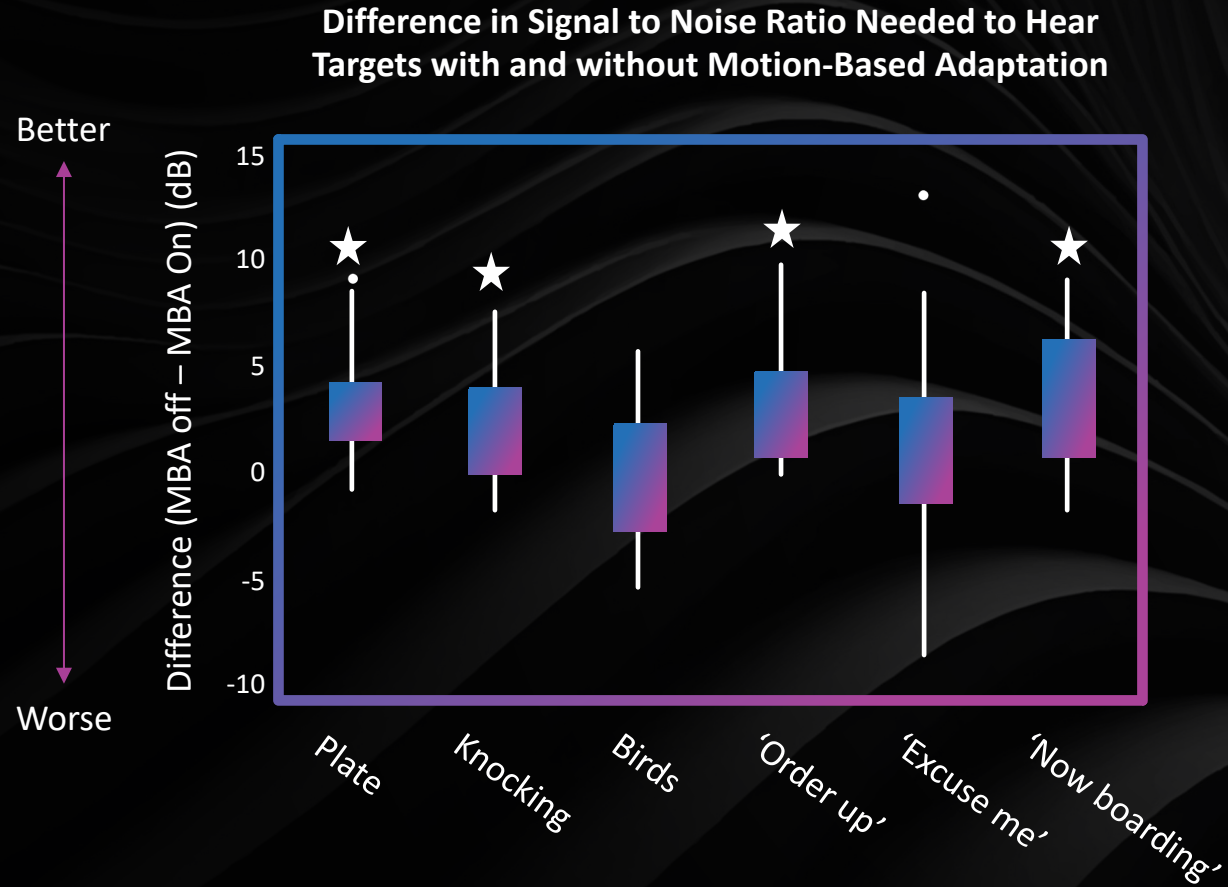


Motion-Based Optimization

Defaults ON

Global control to turn OFF in Sound Manager for all programs





Improved Spatial Awareness

Statistically significant improvement in the SNR needed to achieve “soft but audible” audibility for target signals

Improved Feedback Management

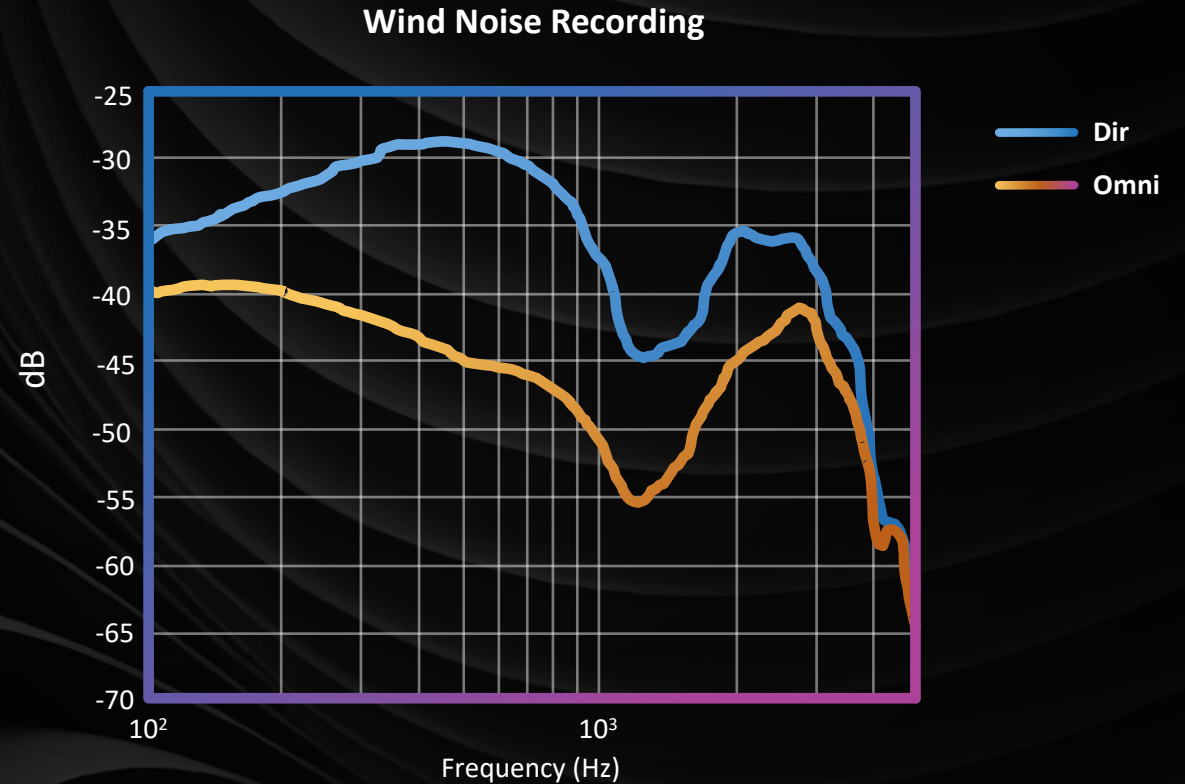
10% greater
gain margins

to prevent feedback during activity



Improved Wind Noise Reduction

Less wind noise in omni-directional when the user is in motion



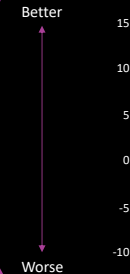
GENESIS^{AI}

Our most studied
and validated
product family

**Improved Speech
Recognition in Noise**
with Edge Mode+



**Improved
Spatial Awareness**
with Motion-Based Optimization



**Improved Feedback
Management**
during activity

10%

GREATER GAIN MARGINS
*to prevent feedback during
activity*

Streaming Sound Quality



StarLink

Accessories

**Everything is better
when you accessorize**

Connect to your favorite music,
TV shows, and phone calls with
superior sound quality

To pair, hearing aids and StarLink
accessories must be within six
inches of each other



Streaming Sound Quality

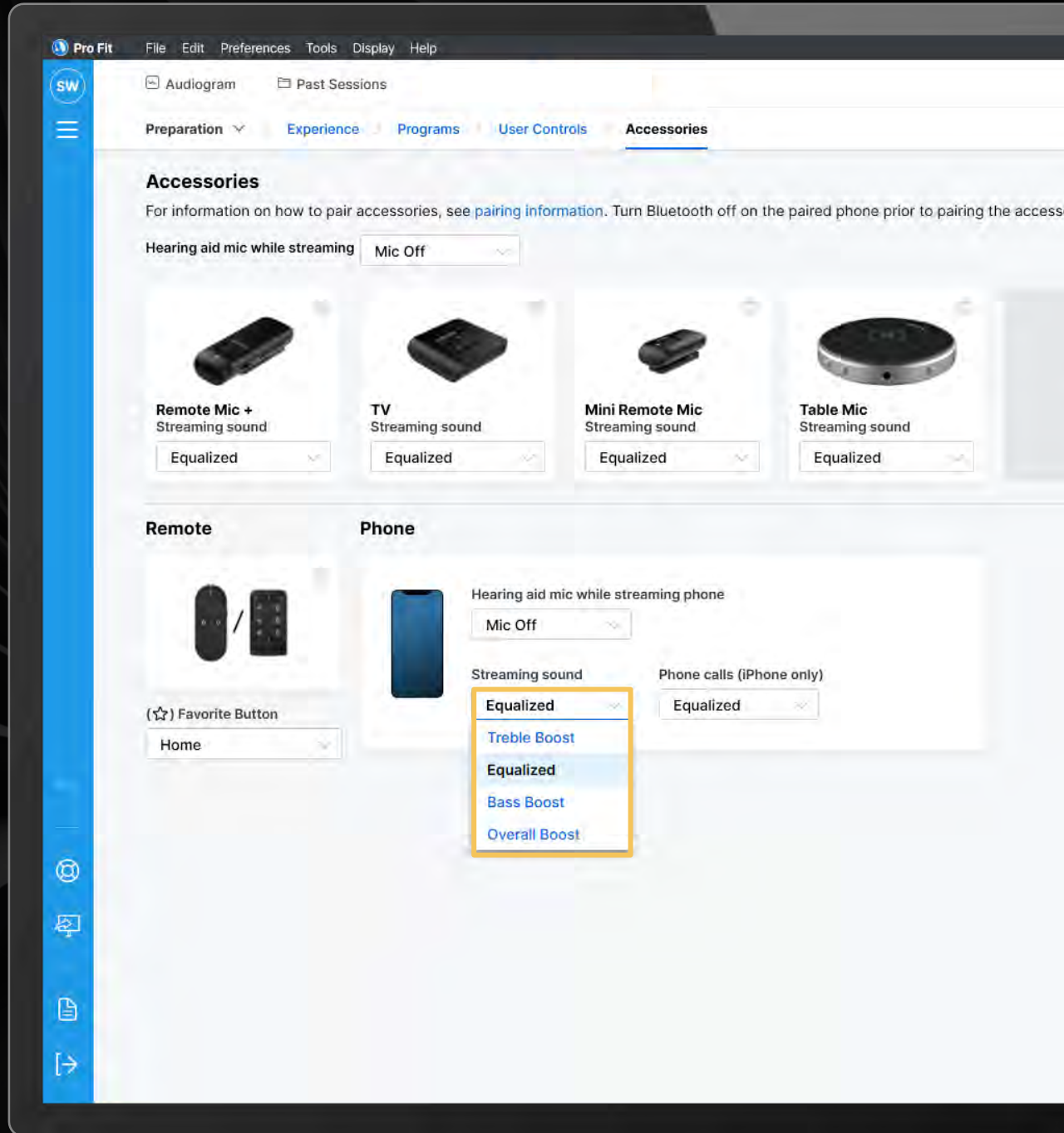
Genesis AI also boasts
improved streaming capabilities

- Streaming can be initiated in any program
- Allows customization of the streaming frequency response for phones and individual accessories through Pro Fit or the My Starkey App

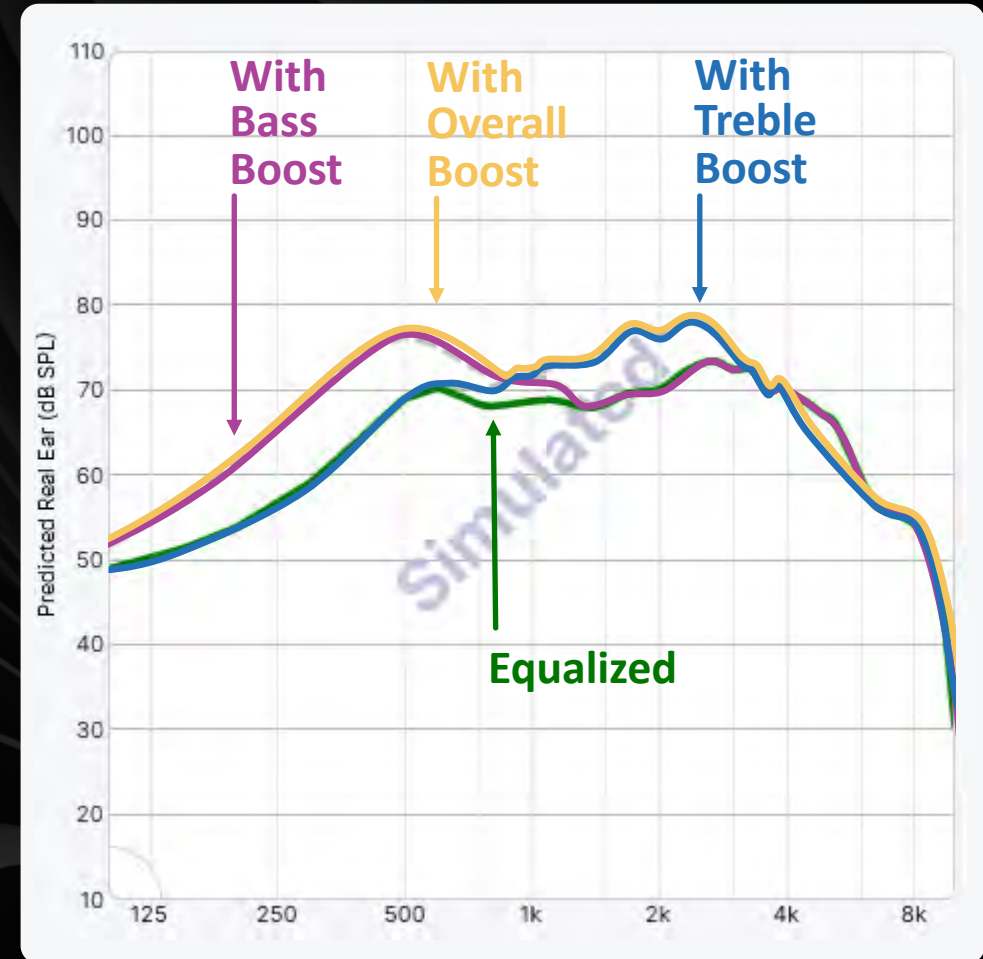


Streaming Behavior

Streaming sound allows the patient to customize the streaming frequency response for smart phones and each individual streaming accessory



Streaming Sound Options

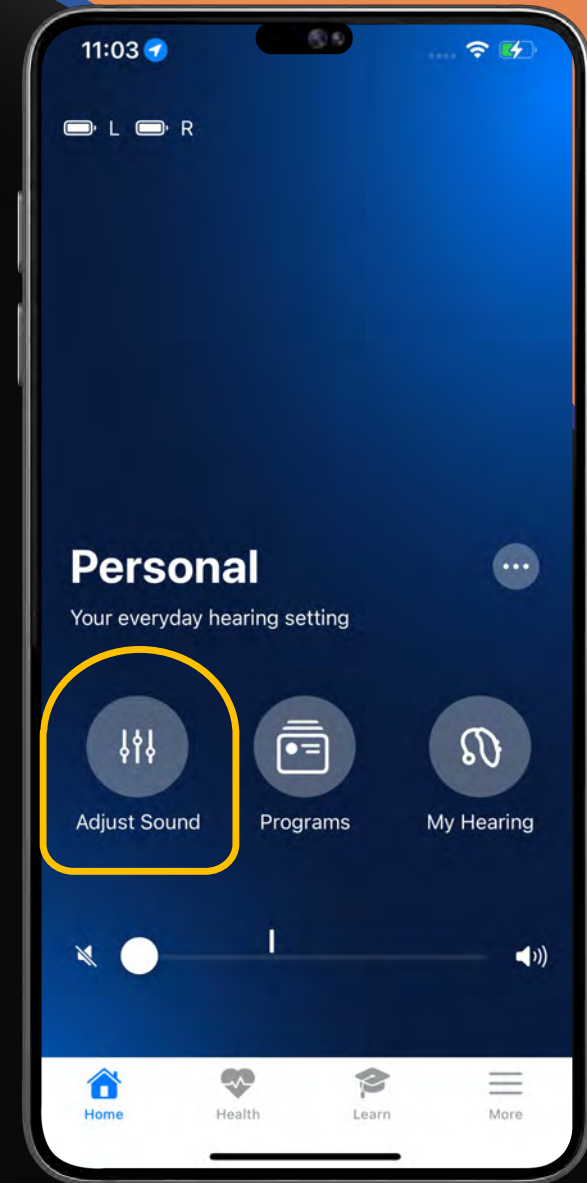


Best Fit - Flat 50 dB Audiogram

Streaming

Improved streaming experience

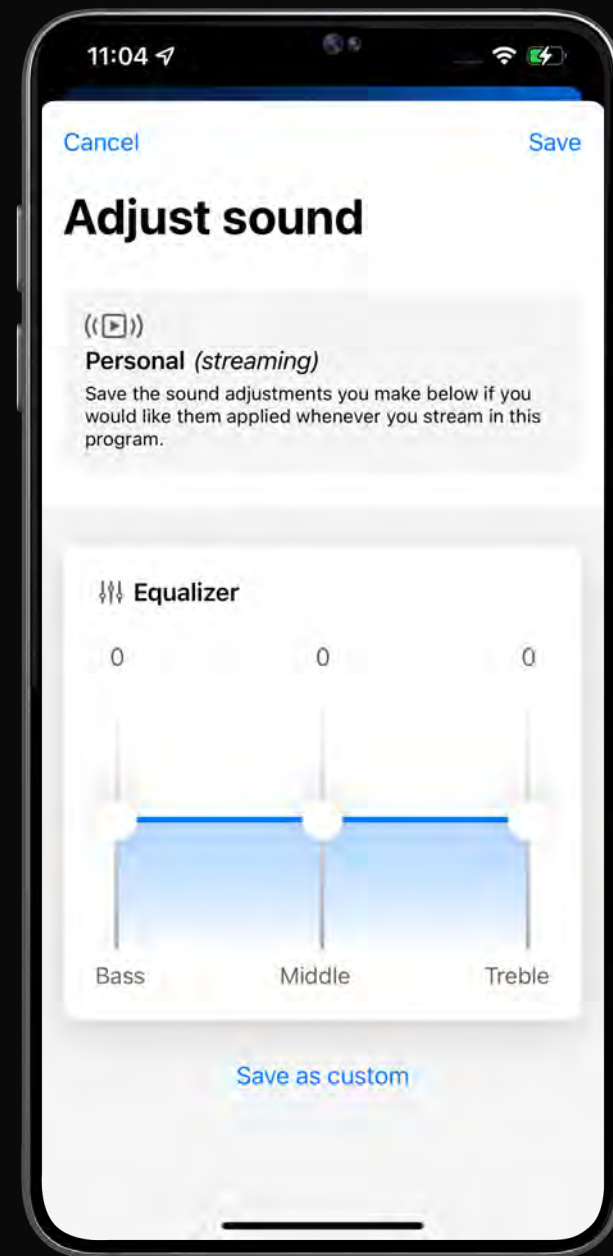
When streaming, Edge Mode+ button is replaced with “Adjust Sound”



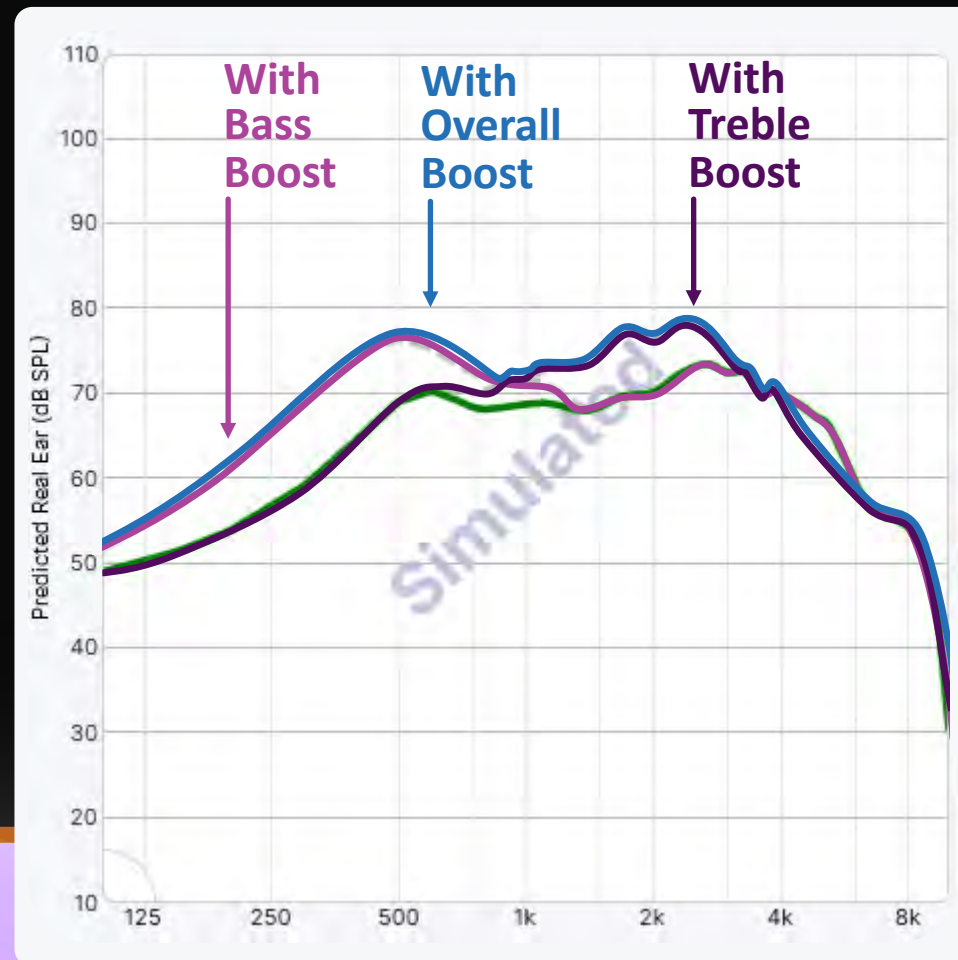
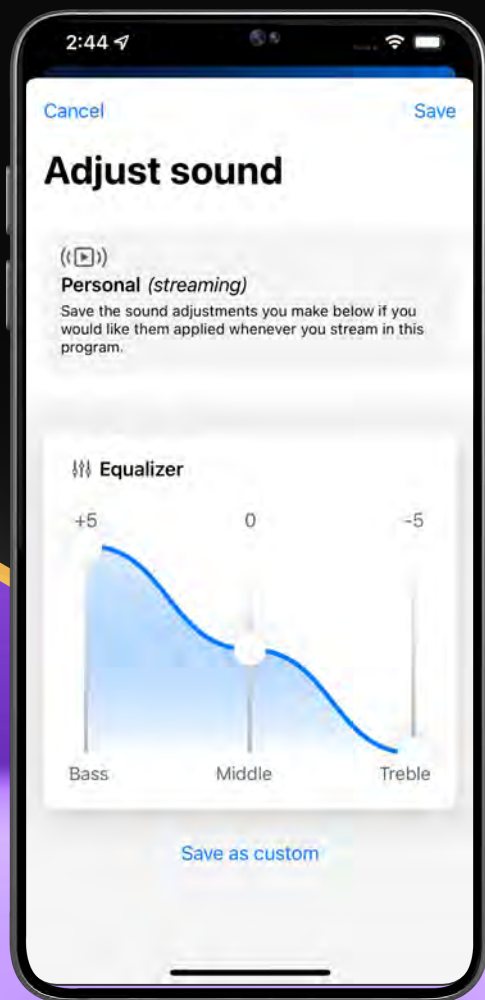


Improved streaming sound quality

New equalizer to adjust streaming sound quality in the My Starkey app



Streaming



A man with grey hair and a beard, wearing a dark jacket over a light shirt, is holding a smartphone in his right hand and looking at it with a smile. The background is a solid blue color.

Versatile Connectivity

Binaural phone streaming

**UP
TO 40%
INCREASE**
in wireless range for all
phones and accessories*

*Operational range may vary depending on usage condition

Telecoils and Phone Use

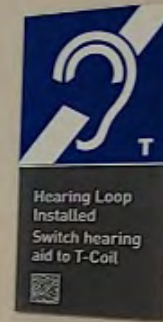
The background features a large, dark, semi-transparent circle on the left side. To the right of this circle, there are several horizontal, wavy lines in a lighter shade of gray, creating a sense of depth and movement. The overall color palette is dark, with shades of black and gray, accented by a thin orange line that follows the curve of the large circle.

Genesis AI Telecoil Demo

Hearing Aids
Only



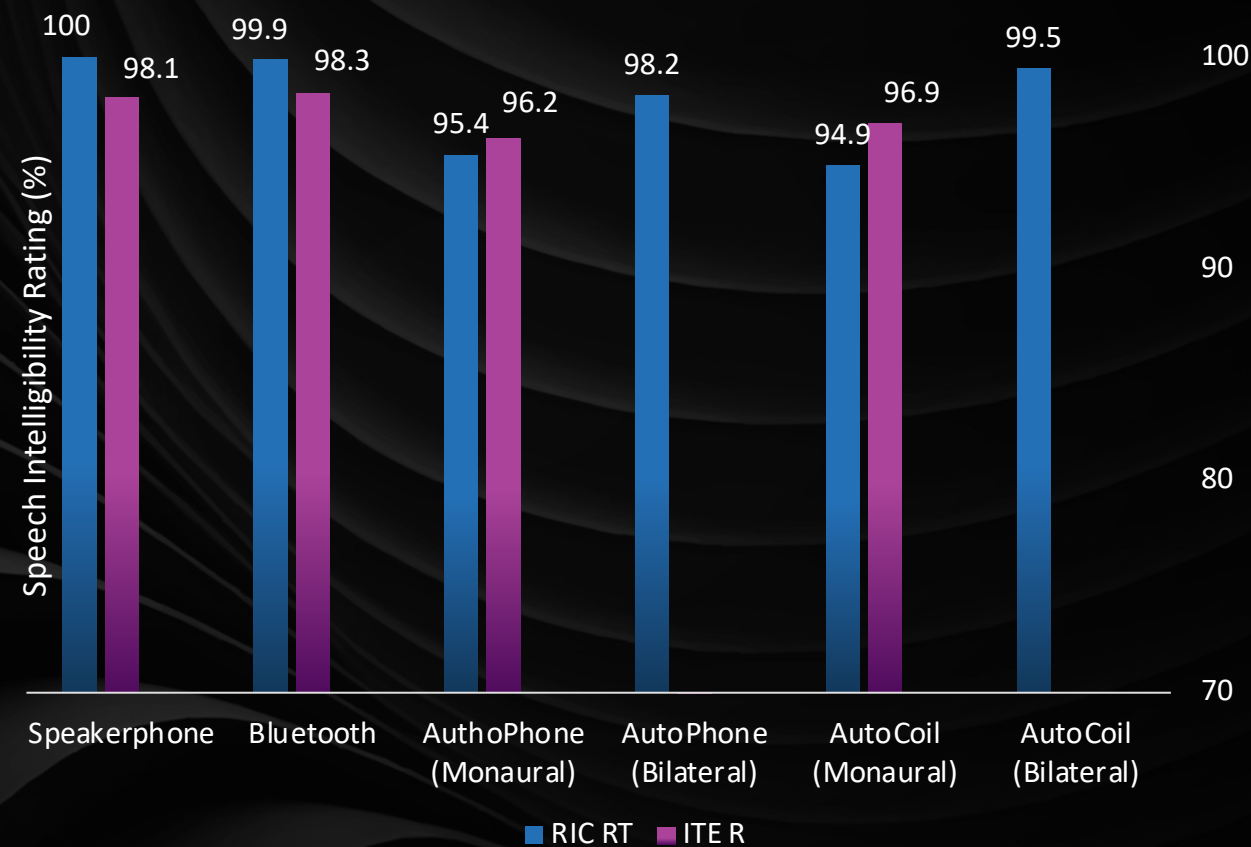
Hearing Aid
+ Telecoil



Telephone Options

Subjective Speech Intelligibility was estimated using the SIR for participants wearing wireless RIC RT (n=13) and ITE R with telecoils (n=7)

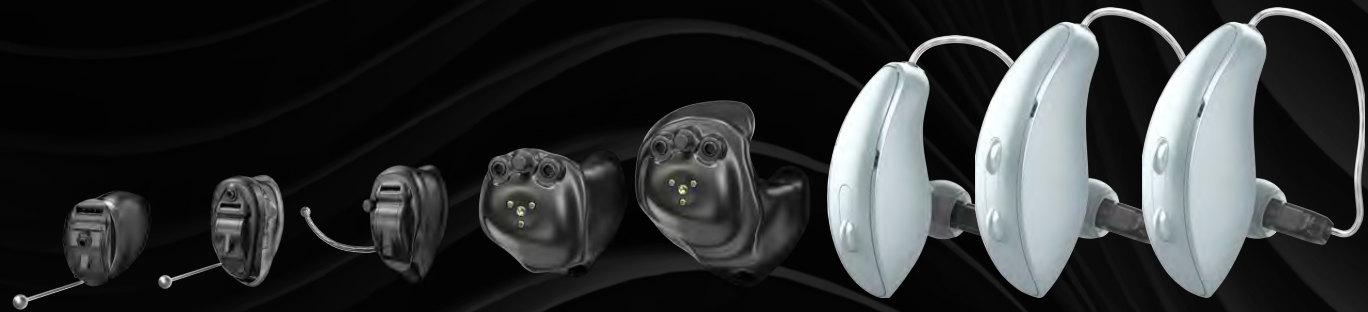
Speech Intelligibility Rating (SIR) Test Scores





No rest for the best

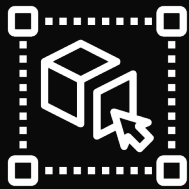
GENESIS^{AI}



Signature
SERIES



Technology for All Day Wear



**Innovative,
Modern Design**



Pro8 Hydrashield™
8 points of protection



**Industry's best
battery life**



Organized

3 session types
providing access to
the most used screens



Efficient

Box to best fit
in four clicks



Intuitive

No need to assign
a hearing aid
as right and left



Supportive

Access to tools such as
Troubleshooting
from any screen

Starkey **Pro Fit**



Starkey **Pro Fit**

Minute Fit™

Our trademarked methodology that allows you to go from box to best fit in four clicks.

Smart Connect

Automatically advances you to the exact session you need the moment you connect any hearing aids.

MyStarkey

Starkey's most intuitive
hearing aid mobile app



MyStarkey

DELIVERS

The most user research and user testing of any Starkey app made to date

Features a modern look and simplified navigation designed to create a best-in-class app experience

Most used features conveniently located on the home screen

Edge Mode+

TeleHear Remote Patient Services

Assistive features to hear better with less effort, live healthier, and simplify daily life

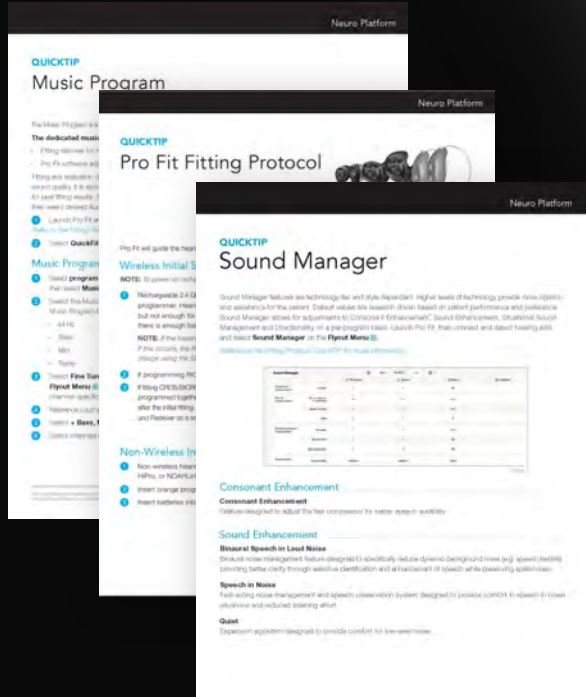
Learn More

Starkey: No Rest for the Best

Pro Fit 101

My Starkey: Keeping
Connections More Simple,
More Personal

Resources



QuickTips



White Papers



Uncompromising Sound.
Unrivaled Ease.