



Advancing the Leading Edge of Hearing Aid Fittings with Real Ear Measures



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CAN YOU HEAR ME?

If you have any technical problems, please stay logged
on and call Audiology Online at
1-800-753-2160

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This session is
available for
1/.1 CEU

Must stay
logged on for
the full session

Must
successfully
complete a
short quiz

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Learner Outcomes

After this course learners will be able to:

- Explain the basic reasons to utilize real ear measures and common functions of real ear measures in a hearing aid fitting.
- Describe which real ear equipment and Starkey hearing aids are compatible with the new real ear system within Inspire.
- Discuss the process for using the new real ear system within Inspire.

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Like nothing else. From no one else.



Most complete line of rechargeable products in the industry



Game changing sound with Hearing Reality Pro



Ultimate control and connectivity



An unmatched fitting experience

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INDUSTRY LEADING

Lithium-ion Technology



NEW – smallest, most powerful 2.4GHz rechargeable BTE on the market today



First custom rechargeable on the market (ITE, HS, ITC)




Industry-leading charger design



Most lithium-ion rechargeable styles in the industry

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Delivering Everything Patients Want

Custom, Convenient, Comfortable

Thrive Platform	Push Button, Rotary VC, or Dual User Controls
Artificial Intelligence and Embedded Sensor Technology	Up to 130/70 Matrix
2.4 GHz Wireless Technology	Telecoil (ITE only)
Compatible with all 2.4 GHz Accessories	Available in all product tiers: Livio Edge AI, Livio AI, and Livio
Available in ITE, HS and ITC	

Faceplate Colors

Shell Colors

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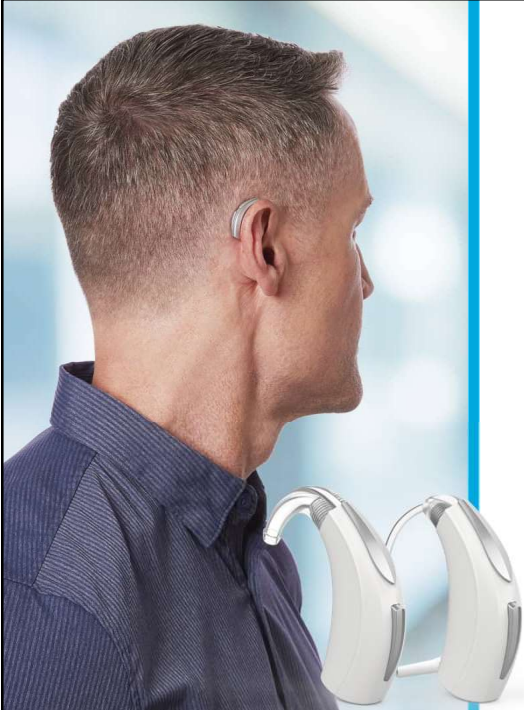


Custom Rechargeable and Face Masks


Comfortably wear a mask without the
concern of losing your hearing aids

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BTE-R

Thrive Platform	IP 68*
Artificial Intelligence and Embedded Sensor Technology (<i>Livio Edge, Livio AI only</i>)	Push button
2.4 GHz Wireless Technology	Telecoil
Compatible with all 2.4 GHz Accessories	Matrix 130/70
Available with Livio Edge AI, Livio AI and Livio	Thin tube compatible
	Available colors
	

*IP: (Ingress Protection) a rating of how resistant a device is to foreign material such as dust and water.

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INTRODUCING

**The world's smallest, most powerful
2.4 GHz rechargeable BTE¹**



Easy to choose, easy to use

The industry's most complete line of rechargeables

¹Starkey Competitive Benchmarking Study 2019

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continued



NEW

livioEdge^{AI}

2400

livio^{AI}

2000 1600 1200 1000

livio

2400 2000 1600 1200 1000

The advertisement features three main product images: two large white behind-the-ear hearing aids at the top left, a row of seven color swatches below them, and a smaller image at the bottom left showing a white behind-the-ear aid and an open black charging case containing two clear in-ear aids. To the right of these images are three product lines. The first line is for 'livioEdge^{AI}' with a '2400' model option. The second line is for 'livio^{AI}' with model options '2000', '1600', '1200', and '1000'. The third line is for 'livio' with model options '2400', '2000', '1600', '1200', and '1000'. Each model name is followed by a horizontal line for additional information.

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Industry Leading Charging Options



Standard Charger

Compatible with
RIC-R
BTE-R



Custom Charger

Compatible with
Custom ITE,
HS, ITC

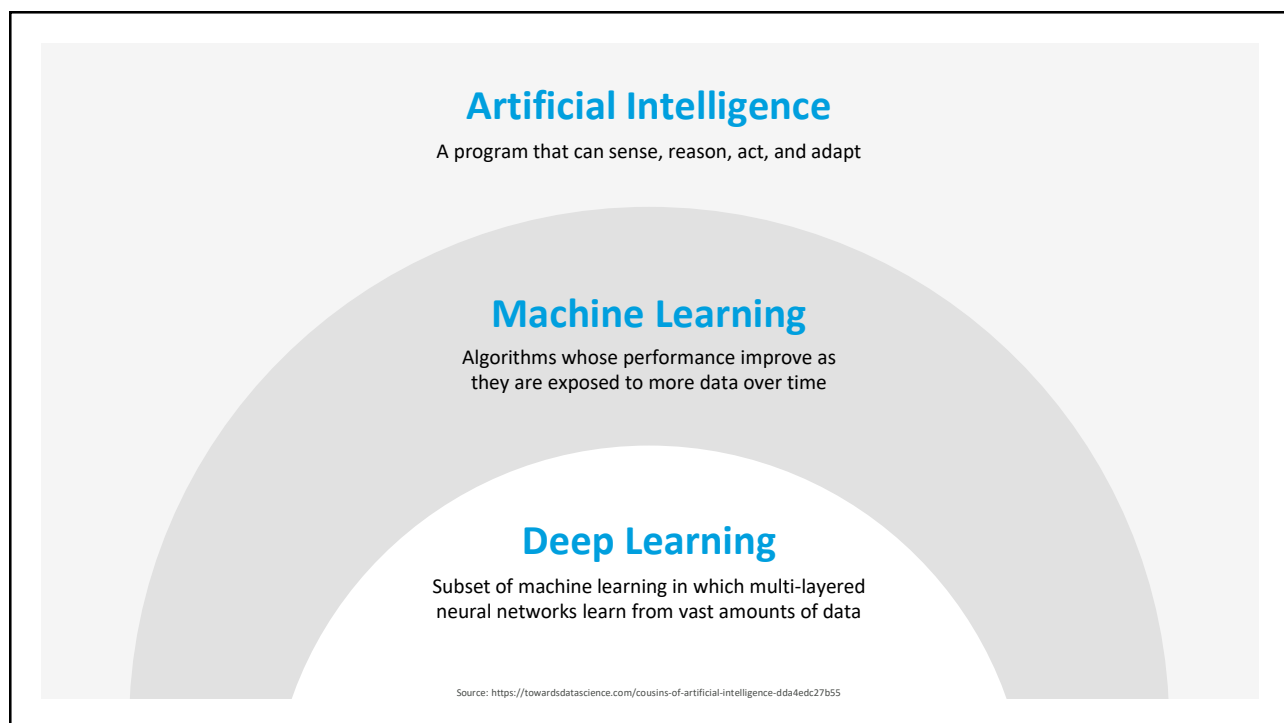


Mini Turbo Charger

Compatible with
RIC-R
BTE-R

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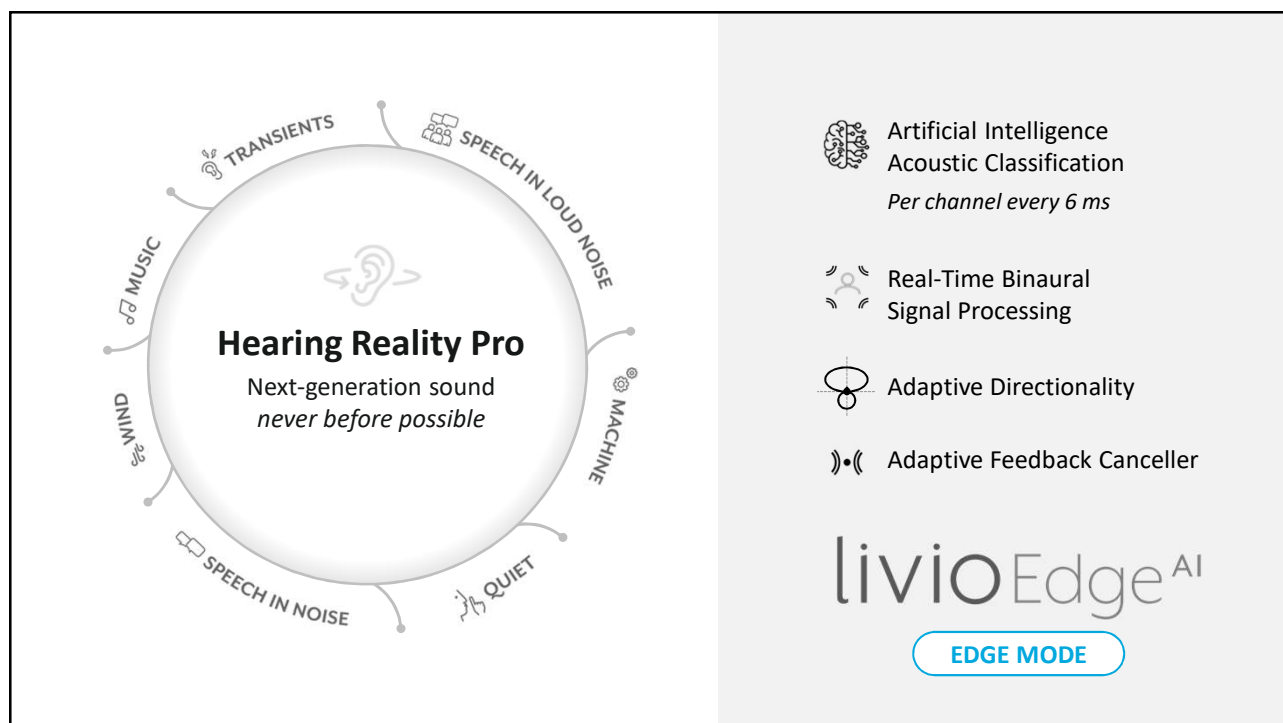
Comfort

Clarity

Communication

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Edge Mode

Continuous **analysis of environments** for advanced level of comfort and clarity

On-demand adaptive tuning for any environment when engaged

Settings are **fixed** once engaged

Disengage and engage to accommodate changes to **listening environment**



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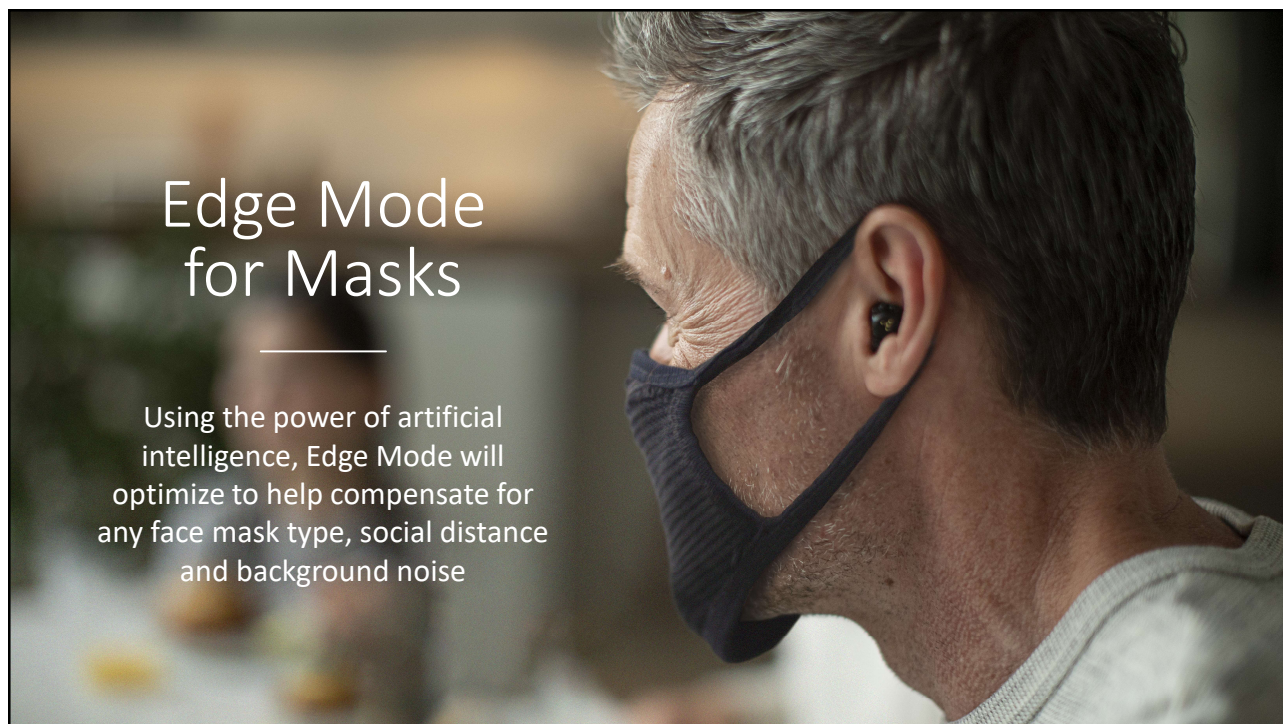


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Edge Mode for Masks

Using the power of artificial intelligence, Edge Mode will optimize to help compensate for any face mask type, social distance and background noise



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Thrive on the Leading Edge



thrive

BETTER THAN EVER with improved usability and industry-leading innovative features

We are excited to introduce several enhancements to the Thrive Hearing Control app, including **step-by-step setup** screens to make set-up streamlined and user friendly.

[IntelliVoice](#)

[Find My Phone](#)

[In-App Purchase](#)

[Live Session](#)

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An unmatched fitting
experience on every level

Live Sessions
Synchronous remote programming
New Inspire X features make it easier
to get a customized, accurate fit

Multiflex Tinnitus Pro

REM Target Match



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continued

Hearing Care Anywhere

Telehealth application for remote
hearing aid programming adjustments

livioEdge^{AI} | livio^{AI} | livio



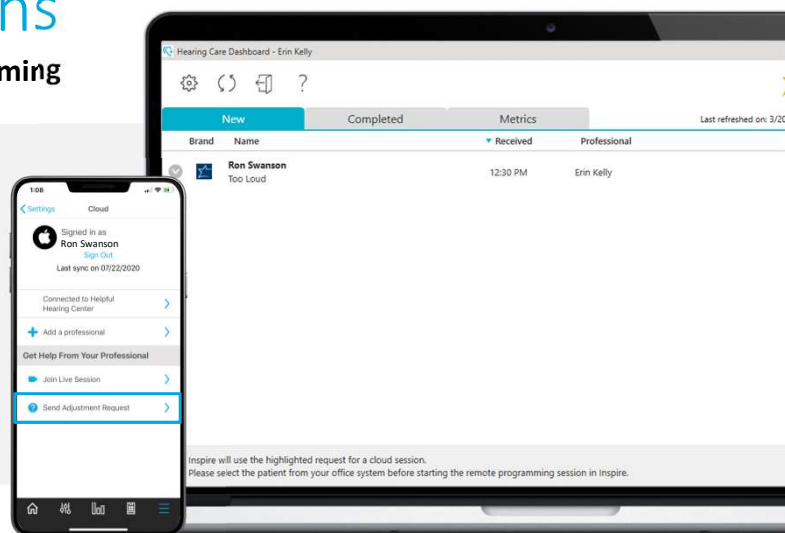
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Remote Sessions

Asynchronous Remote Programming

- Allows both hearing aid users and professionals to manage hearing aid adjustments **at their convenience**
- Available in all styles of Livio Edge AI, Livio AI and Livio hearing aids
- **Compatible with all iOS and Android smart devices supported by the Thrive Hearing Control app**



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Live Sessions

**Synchronous Remote Programming
in Hearing Care Anywhere**

Leverages live video chat to
enable and improve remote care

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Live Sessions

Synchronous Remote Programming

- **Allows for real time hearing aid adjustments** using a two-way audiovisual link between the professional and the hearing aid user
- **Available in all styles** of Livio Edge AI, Livio AI and Livio hearing aids
- **Compatible with all iOS and Android smart devices supported by the Thrive Hearing Control app**



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Multiflex Tinnitus Pro

Personalized tinnitus stimulus improvements

A new shaping algorithm and
custom fit tool helps provide more
personalized maskers for each
patient's unique needs



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Multiflex Tinnitus Pro

**Next generation feature for sound
therapy tinnitus management**

Three stimulus options to
effectively mask the user's tinnitus:

White Noise

NEW Audiogram-shaped

NEW Custom

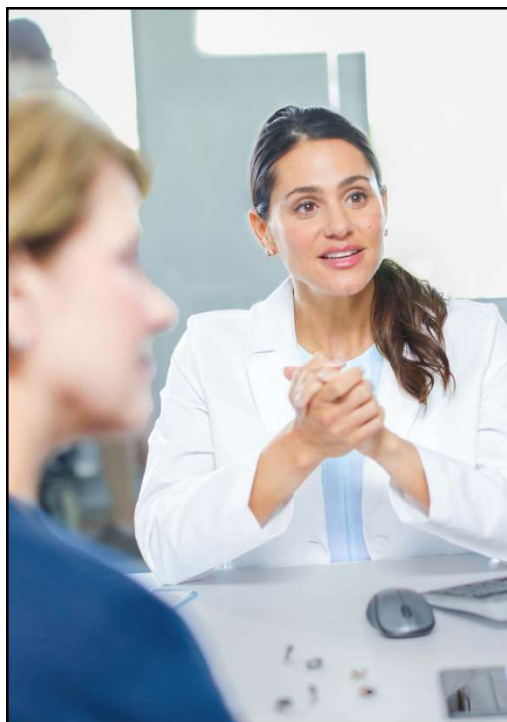
livioEdge^{AI}
2400



AVAILABLE ON ALL STYLES

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REM Target Match

Auto Real Ear Measurement

Speeds up fitting and leaves
more time for counseling

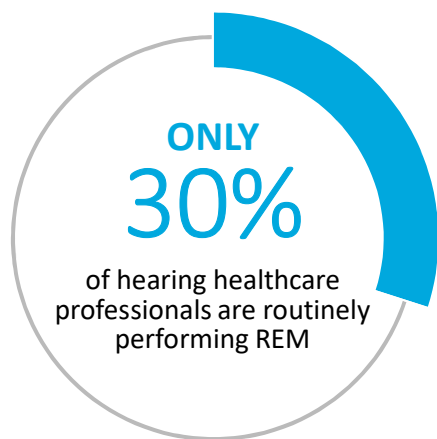
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Unsure of real-world benefit



Time constraints



Cost



Unsure how to
perform/interpret

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Best Practices



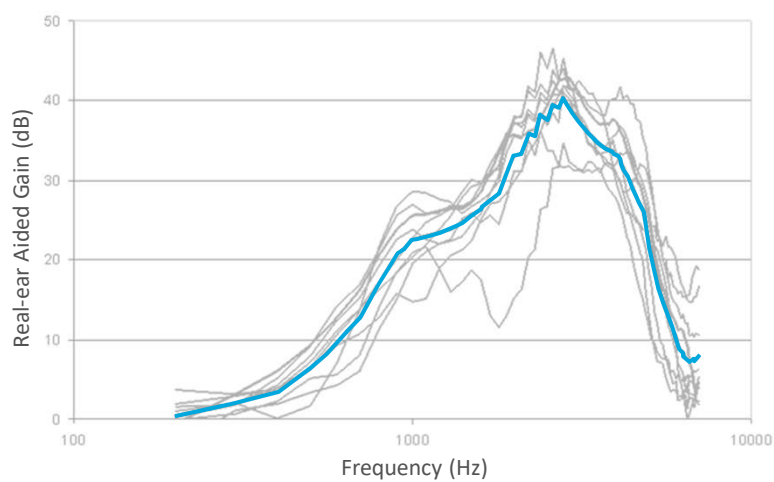
**The best way to verify the
performance of a hearing aid**
according to best practices¹

1. Valente M, Abrams H, Benson D, et al. Guidelines for the Audiological Management of Adult Hearing Impairment. *Audiology Today*. 2006;Vol 18.

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Initial Fit Algorithms



Yanz and Olson, 2006

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Includes individual ear information
for a **more precise, personalized**
hearing aid fitting

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Contributes to higher overall satisfaction with hearing aids and their hearing care professional, as well as an improved patient experience¹

1. Amlani AM, Pumford J, Gessling E. Improving patient perception of clinical services through real-ear measurements. *Hearing Review*. 2016;23(12):12-21.

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REM Benefits

- Greater perceptual benefit with REM
- Reduced listening effort
- Improved speech understanding
- Reduced patient visits

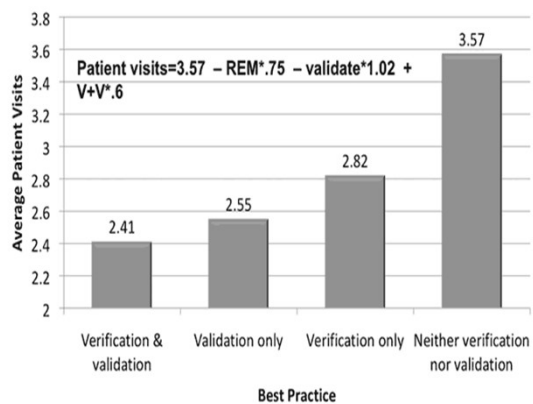


Chart Source: Kochkin, 2011.

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Stand Out from the Competition



Eliminate estimation
errors



Provide the most
comprehensive care



Differentiate yourself
from other
professionals

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Goals of Rem



Verify
audibility



Verify
output



Ensure patient
benefit



Troubleshoot
complaints

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Verifying Audibility



Average speech falls
within patient's
dynamic range



Soft speech and
environmental
sounds are audible



Loud sounds are loud
but comfortable

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Balancing Act

AUDIBILITY

**SOUND
QUALITY**

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1

Hearing Evaluation

- UCLs
- Speech-in-Noise Testing
- Self Report Questionnaires

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2 Initial Fit and REM

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3

Follow-up & Validation

- Speech-in-Noise Testing
- Self-Report Questionnaires
- Counseling
- Adjustments

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Audibility and Comfort Verified



AUDIBILITY

SOUND
QUALITY

OUR ROLE: Ensure patients are satisfied
with their hearing aids

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Real Ear Terminology for REM Target Match

Real Ear Unaided Gain (REUG)

- A measurement of the resonant peak or natural boost in high frequency sounds in the patient's open ear without a hearing aid inserted.

Real Ear Aided Response (REAR)

- When a hearing aid is placed in the ear canal, the open ear gain is impacted. Compensating for the loss of natural gain requires measuring the gain of the hearing aid across frequencies while inserted into the patient's ear.

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REM Target Match

A streamlined process for automatically matching real ear targets to provide an accurate and efficient fitting experience.



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REM Target Match

Quick, Efficient, Accurate



Fully integrated workflow via the REM Target Match Tool



Allows for **simultaneous binaural real ear measurements**



Automatic target matching for both the e-STAT proprietary and standard prescriptive formulas



Live display of measurements relative to target



Allows for manual fine tuning to further personalize a fitting as needed

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Benefits to Hearing Healthcare Professionals

Quick, Efficient, Accurate

- Match to targets faster than matching to targets manually. Measurements can be completed in about 5-10 minutes.
- No need to control two systems. Fully integrated workflow within the Inspire software
- Automatic target match reduces the variability of manually matching targets
- Fewer patient follow up visits with the use of real ear measurements¹
- More time for counseling patients
- Provide optimal hearing aid benefit for patients through fitting verification^{2,3}

1. Kochkin S. (2011). MarkeTrak VIII: Reducing patient visits through verification and validation. *Hearing Review*, 18(6): 10-12.

2. Kochkin S, Beck DL, I Christensen, et al. (2010). MarkeTrak VIII: The impact of the hearing healthcare professional on hearing aid user success. *Hearing Review*, 17(4):12-34.

3. Abrams HB, Chisolm TH, McManus M, McArdle R. (2012). Initial-fit approach versus verified prescription: Comparing self-perceived hearing aid benefit. *Journal of the American Academy of Audiology*, 23(10):768-778.

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Compatibility Requirements



Requires Noah Version 4.5.1 or higher

REM Target Match not available for stand-alone software



Requires Inspire 2020.1

Compatible with all products, styles and technology tiers since the Muse release

Muse | Muse iQ | Halo 2 | Halo iQ | SoundLens Synergy | SoundLens Synergy iQ | Picasso | Livio | Livio AI | Livio Edge AI

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Compatibility Requirements

Compatible with the following real ear systems



Otometrics
Aurical FreeFit



MedRx
Avant REM Speech+







Inventis
Maestro Trumpet*
*(compatible after October 2020.
Inspire X updated needed)*

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4 Simple Steps for using REM Target Match

-  Setup
-  Calibration
-  Unaided
-  Aided

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Otoscopy

Prior to conducting any
real ear measurements



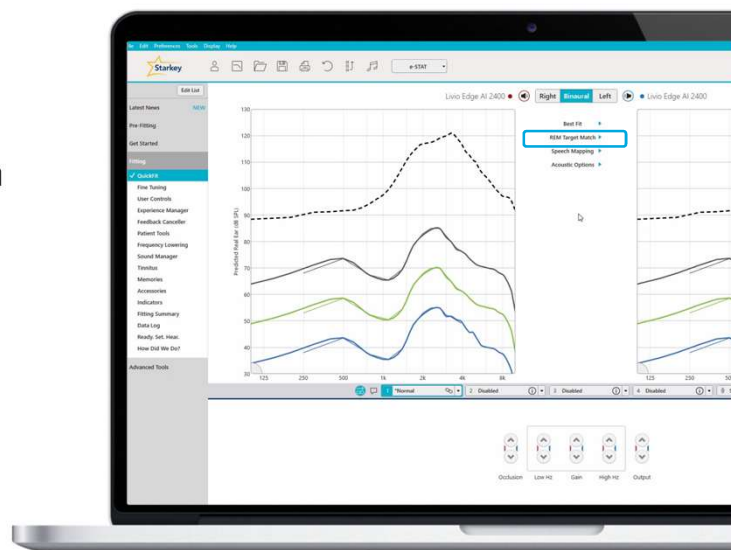
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4 Simple Steps for using REM Target Match

TO BEGIN

- Launch Inspire
- Select REM Target Match



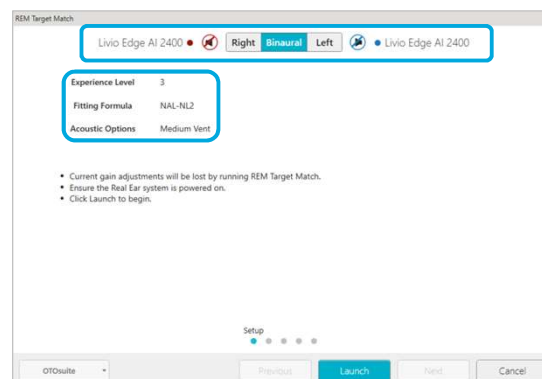
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Step 1

Setup

View the connected hearing aids, experience level, fitting formula and acoustic options.



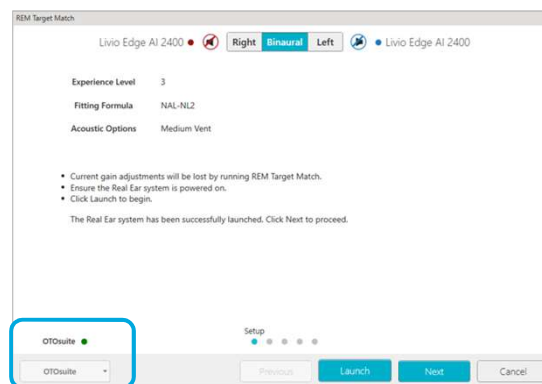
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Step 1

Setup *(continued)*

- Select the real ear system in the bottom left corner and make sure it is powered on.
- Click “**Launch**” to begin.
- Click “**Next**” to proceed



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Step 2

Calibration

- Fold the probe tube over and place the probe tube opening on top of the reference microphone.



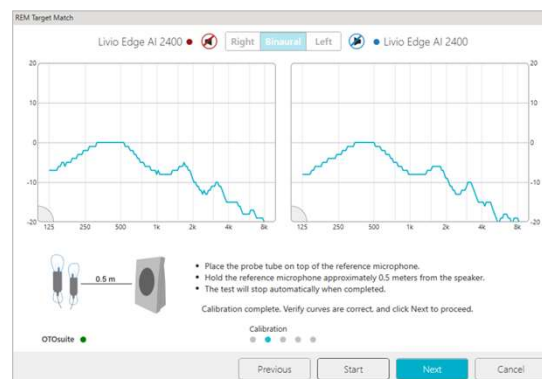
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Step 2

Calibration *(continued)*

- Place the reference microphones approximately .5 meters or 1.5 ft away from the real ear system speaker.
- Select “**Start**”
- Click “**Next**” to proceed.



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Step 3

Unaided



Seat the patient in front of the real ear system speaker, approximately 1 meter or 3 feet away

- Carefully place the probe tube in the patient's ear canal
- Instruct the patient

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Step 3

Unaided *(continued)*

- Press **“Start”**
The test will stop automatically when completed.
- Click **“Next”** to proceed.



— Average REUG
— Measured REUG

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Aided

Good to Know

- **An ISTS speech signal is used for the aided measurements.**
ISTS (International Speech Test Signal) is an internationally recognized test signal used for probe microphone measurements.

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Aided

Good to Know

- Aided measurements are always completed in the Normal program.
- Hearing aids are automatically set to omni-directional and all features are off during aided measurements.

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Aided

Good to Know

- Targets are matched from 250-5000 Hz
- If you re-enter the REM tool to take new measurements, previous measurements will be erased.

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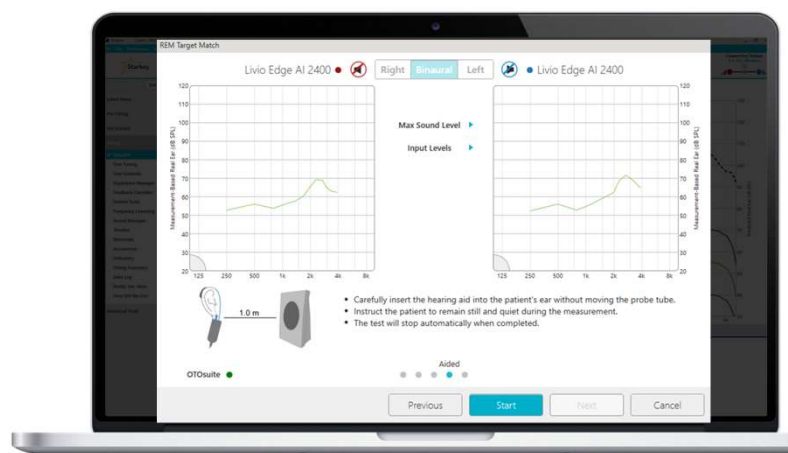


Step 4

Aided (continued)

There are two adjustable options available in the tool on the aided response screen

-  Max Sound Level
-  Input Level



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Step 4

Aided (continued)

Max Sound Level

Select the loudness level at which the system will automatically stop measuring



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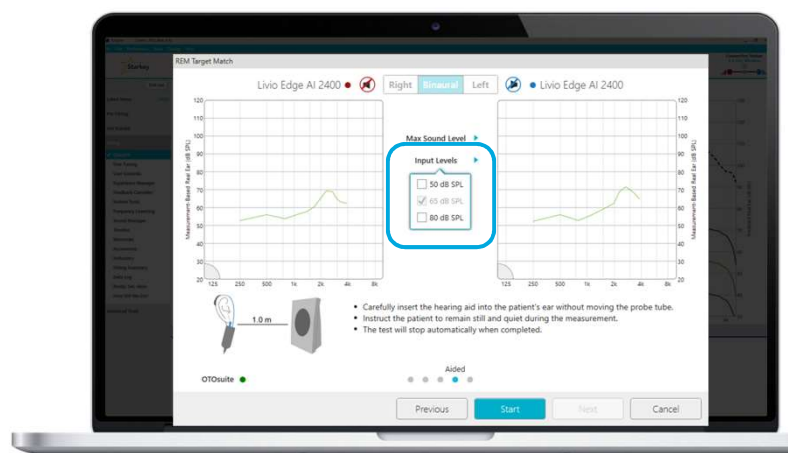
Step 4

Aided (continued)

Input Level

Select the input level at which you would like to measure

- 50 dB, 65 dB or 80 dB



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Step 4

Aided



Seat the patient in front of the real ear system speaker, approximately 1 meter or 3 feet away

- Carefully insert the hearing aid into the patient's ear without moving the probe tube
- Instruct the patient

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Step 4

Aided (continued)

- Click “**Start**”
- Click “**Next**” to proceed.



- Thin green line= SPL Target
- Dotted green line= Pre-adjustment
- Thick green line= REM Target Match

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Step 4

Aided *(continued)*

- Click “OK” to finish and return to the QuickFit screen.



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After REM Completion

NOTE

“Measurement-Based Real Ear (dB SPL)” will now appear on the side of the fitting graphs.



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REM Target Match Video 1

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Internal Study

Accuracy data for REM Target Match

Methods

Normal-hearing participants

7 female; 3 male

3 hearing loss configurations

3 real ear measurement systems

Results

REM Target Match performed equivalently or within tolerance compared to traditional manual REM fitting and performed consistently across all REM systems.

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REM Tips and Tricks

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REM Target Match

Experience Manager Tip

REM Target Match Tool will always target match to experience level 3.

If the hearing professional has set the experience level to a level other than 3, REM Target match will adjust gain to match that experience level after the target match is complete.

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REM Target Match

Max Sound Level Tip

Hearing professionals can select the loudness level at which the system will automatically stop measuring.

May be useful to align the max sound level with UCL measurements

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REM Target Match

Viewing Measurement Curves

Once you exit the REM Target Match tool, there isn't a way to access the REM measurement curves again

If you re-enter the tool, the system will assume you wish to repeat the measurement process

A screen capture is the most effective way to save the measurements

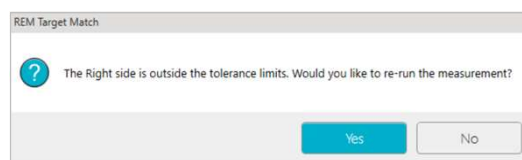
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Error Messages

will display for the following scenarios

- If calibration, REUG or REAR measurements are outside the tolerance limits
- If the hearing aids or real ear system get disconnected

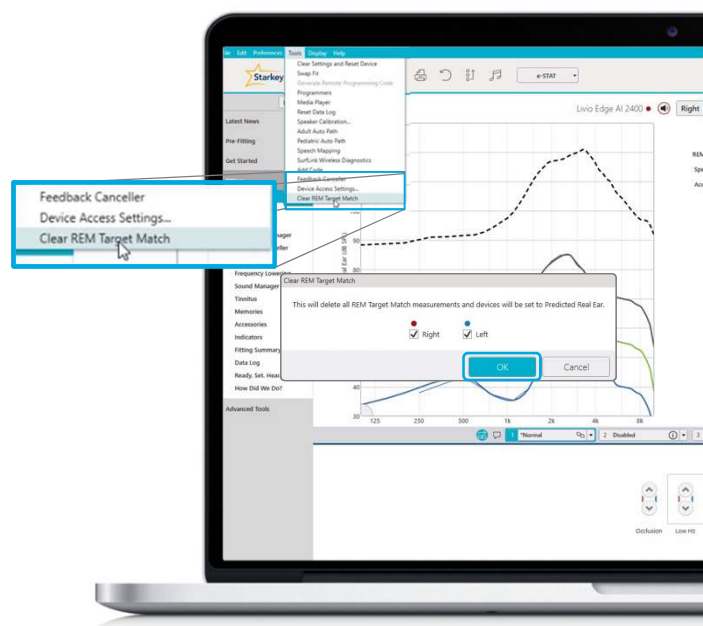


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How to Clear REM Target Match Measurements

- Select the **“Tools”** Menu in the upper Toolbar
- Choose Clear REM Target Match from the drop down menu.
- Select **“OK”** to delete.



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Verifying Audibility is a Starting Point



Real-world
Performance



Sound
Quality



Validation
Measures

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Learn More.... Available on Audiology Online

1 Hour CEU Courses

- **Livio Edge AI:** The Best Just Got Better
- Advancing the Leading Edge of Hearing Aid Fittings with **Real Ear Measures**
- **Thrive Mobile:** The Best Mobile App Just Got Better
- **Rechargeable Technology**
Like Nothing Else, From No One Else
- **Inspire and Hearing Care Anywhere:**
The Best Programming Software Just Got Better
- **Tinnitus Management:** Like Nothing Else From No One Else

Starkey At A Glance

Need a **quick, focused** education on a specific feature/product?

Starkey At A Glance recordings provide brief, yet in-depth focus on specific products or features
(CEU's not provided)

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Thank you



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