

Auditdata

Real Ear Measurements

Everything You Need To Know About REM



Real Ear Measurements (REM) – also called probe microphone measurements – is the best way in audiology to determine if a hearing aid user gets a precise level of amplification needed at each frequency to maximize their hearing improvement.

- Are you having difficulties with patients returning their hearing aids because they are still having trouble hearing?
- Are you finding that your patients keep coming back to your clinic, complaining of hearing troubles even when wearing their hearing aids?
- Are you spending significant time troubleshooting hearing aid problems, which is preventing you from seeing new patients and/or negatively impacting other key performance indicators (KPIs)?

If you answered **YES** to any of the above questions, you likely did not use Real Ear Measurements (REM) to verify your patients’ hearing levels.

Studies have repeatedly shown that using REM during hearing aid fittings delivers better results and happier patients. Unfortunately, REMs have not been widely embraced in the audiology industry, with less than 30% of Hearing Care Providers (HCPs) using REM to verify hearing aid fittings, even though it is recommended as the gold standard by many global professional bodies.

This disconnect is startling, especially considering this approach has been proven to work exceptionally well. Happier patients mean less returns, less follow up consults, more referrals, and more profit.

Increasingly, customers are faced with more hearing aid choices. These new channels might also ensure that new paid services, like verification of fit, or the customization of **over-the-counter (OTC)** or **direct-to-customer (DTC)** devices, may be attractive to customers.

As regulations change and more hearing aid provision channels become available to customers, differentiation of your offerings will be crucial to your success. Providing best practice hearing care elements, such as REM, are essential.

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Why Real Ear Measurements Are Crucial for Success

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Looking Ahead and Using REM as a Key Differentiator

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Undertaking REMs ensures that hearing aids are optimized to perform in each patient's ear. This test is unique because it provides Hearing Care Providers (HCPs) with clear understanding of precisely what is happening in the patients' ears – and no other tool offers this information.

REMs are a crucial tool for success in modern audiology. Multiple studies have shown that utilizing REMs maximizes the chances of successful outcomes and patient satisfaction. A 2017 study published in Hearing Review clearly showed that performing REMs had a beneficial effect on key performance indicators (KPIs) that lead to higher commercial success.

Patients who were fitted using REMs were more inclined to advocate for the hearing clinic, willing to spend more money on hearing aids and accessories, and more likely to stay with the company. When it comes to clinical success, the study results are overwhelming. On the qualitative side, studies from MarkeTrak and others show that hearing aid users are happier and experience better hearing with their hearing aids once REMs are undertaken as part of their fitting.

On the quantitative side, Valente's study shows that users' ability to recognize words in quiet and in noise is improved when fit with REMs.



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Real Ear Measurement during the hearing aid fitting ensures that the patient is receiving the correct amplification level – not too much where everything is too loud and jarring, and not too little, where the patient still has trouble hearing speech even when wearing the hearing aids.



It is important to know that REM testing is safe, and the tools to perform REM are user-friendly. Audiologists should use the solutions, like **The Measure Audiometer and Fitting Unit**, a fast, efficient, and user-friendly audiometer that delivers everything clinicians need to perform an advanced clinical audiology and counselling. Measure provides user guidance that helps Hearing Care Providers feel more comfortable and confident administering REMs.



1. During this process, a thin probe microphone is inserted into the patient's ear canal along with the hearing aid.



2. The clinician gets readings of the exact sound levels a patient receives from the hearing aid while listening to various recorded speech samples. They can further adjust the sound levels to match target amplification levels based on each patient's hearing loss across different sound frequencies.

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KEY BENEFITS:

Reducing the number of return visits

Time is money in any business. REMs ensure the best possible fit for patients' hearing aids. By fitting the hearing aids properly the first time, patients will need less fine-tuning down the road, which means a decreased number of return visits, follow up appointments, and troubleshooting. This boosts efficiencies and improves clinics' bottom lines.

After using verification and validation, **76%** of patients with above-average success were fit in 1 or 2 visits. Conversely, without verification and validation, **47%** of patients with below-average success required 4 to 6 visits to fit their hearing aids.

Reducing the hearing aid return rate

All available evidence shows that patients are happier with their hearing aids – and their audiology providers – when they're fitted using REMs. Delighted patients mean fewer hearing aid returns, which translates to greater time efficiency and more profitable businesses.

Increasing patient satisfaction

Multiple studies have shown that a simple act of undertaking REMs increases the hearing aids' benefits, increasing audibility across many day-to-day situations. It delivers true patient satisfaction, which enhances a practice's reputation while reducing the time and expenses associated with multiple return visits and returns. Such increased patient satisfaction also leads to more loyalty and referrals.

Increasing patient referrals

Happy and satisfied patients are more likely to recommend friends and family to a business. Leads from patient referrals are usually of very high quality and often have an increased purchase intent.



Looking Ahead and Using REM as a **Key Differentiator**

In many parts of the world, including Denmark, the UK, Germany, France, Australia, New Zealand, and Canada, hearing aids are provided either free at the point of access or heavily subsidized.

Several countries include REMs either as mandatory parts of the fitting process or actively plan to do so. Private practices in these countries must perform REMs and document them to get paid. While the United States has different reimbursement models, there's still substantial evidence that REMs should be applied – even if this is not a country-wide mandate.

Experts predict that more regulatory bodies and insurers will demand REMs for compensation. REMs have also become a **“cause celeb”** among many hearing loss advocates, patient advocates within the hearing care space, and audiology influencers. Patients are more aware of – and interested in – REMs and more knowledgeable about the benefits that REMs provide. Already some patients are demanding them as part of their fitting – a trend that will likely continue.



OTC Hearing Aids: What You Should Know

In 2022, the FDA approved over the counter (OTC) hearing aids. The changes in provision channels impact how practices offer services and care. New OTC and DTC devices will directly impact patients' attitudes concerning hearing aid testing and fitting.

If patients can self-test using an app that produces beeps and whistles, what's the point of attending a private practice that appears to do the same?

To answer this question, keep in mind that these new channels might ensure that paid services – like verification of fit, or the customization of OTC or DTC devices – may be attractive to customers. Since regulations changed and more hearing aid provision channels are available, differentiation of your offerings is crucial to your success. Providing best practice hearing care elements, such as REM, are essential. Also, REM requires patients to visit your clinics, thus driving foot traffic.

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Hearing aids purchased online – or OTC devices – are delivered straightforwardly. A customer buys them, a vendor provides them, and the customer self-tests and self-fits. As previously stated, the process of getting an OTC involves no best practice, such as speech discrimination, QuickSIN testing, or independent fit verification.

A business that offers all these best practice procedures differentiates itself immediately, and that differentiation is crucial to your clinic's successes. Since only 30% of hearing care businesses follow these best practices, you will also be differentiating your business from your competitors.

With the increasing commercial pressure from internal and external forces, hearing clinics will need to innovate to survive. They will also need to offer high-quality, best practice care to remain relevant and appealing to today's patients.



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With all the proven benefits of REM as a best practice, why aren't more hearing clinics providing this test? Part of the problem is that misconceptions about REM may put professionals off and deter them from conducting this important test.

Some of these misconceptions include:

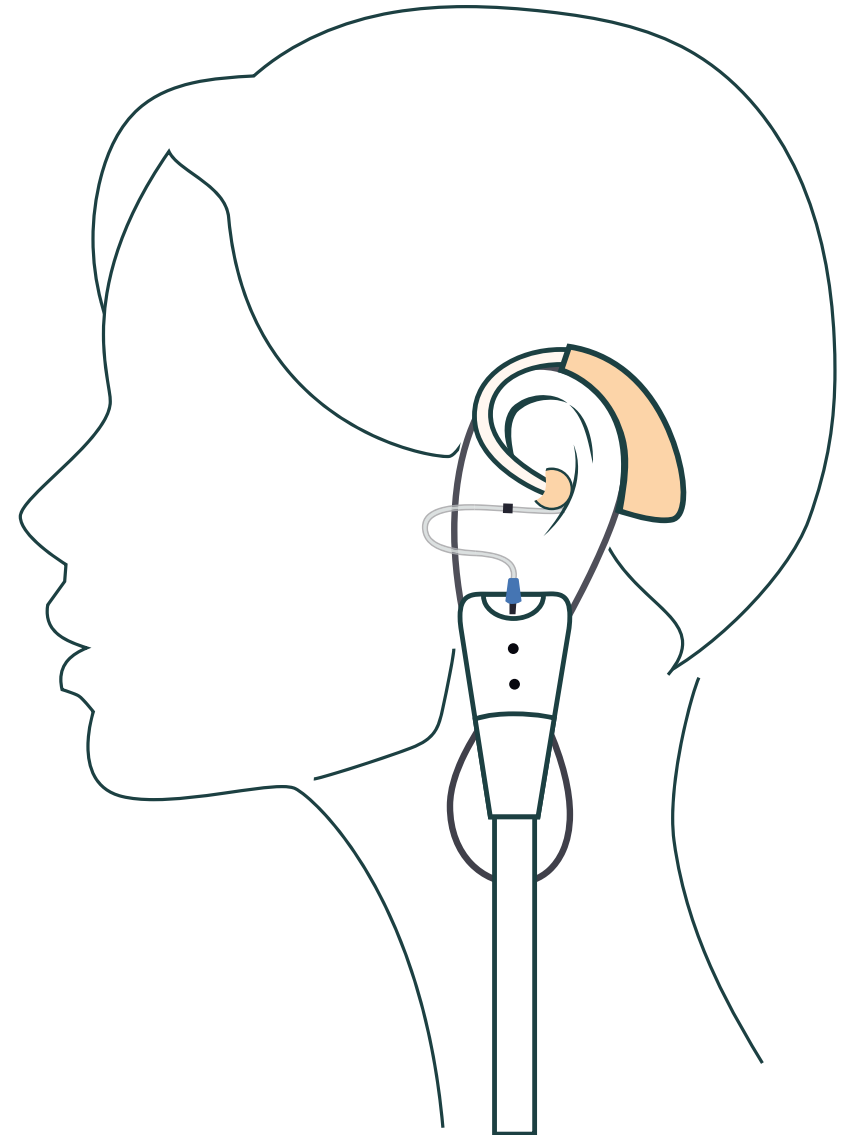
Misconception 1: REM equipment is expensive and unwieldy

Misconception 2: REM does not offer any benefits for my practice or clinics

Misconception 3: REMs take too long

Misconception 4: Inserting the probe might hurt the patient

Misconception 5: The patient won't like the output



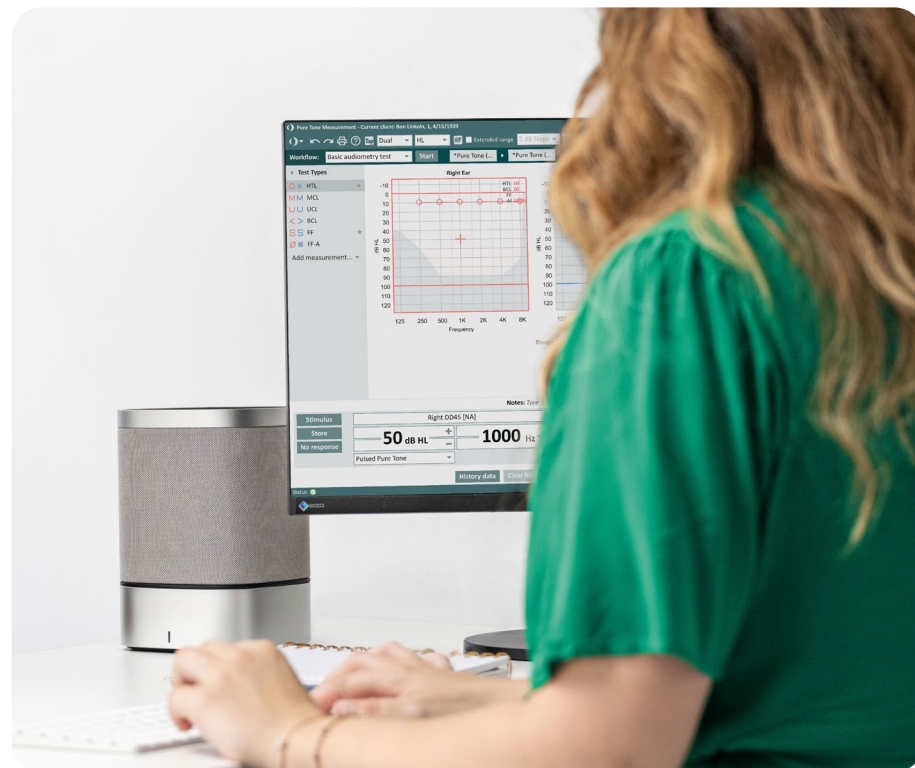
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MISCONCEPTION 1: REAL EAR MEASUREMENT EQUIPMENT IS EXPENSIVE AND UNWIELDY



REM equipment is more affordable and more mobile than ever before. The Measure Audiometer offers REMs as an add-on module that integrates well within the hardware. The extra speaker and transducers are small and easy to carry. Setting them up is quick and easy: just plug the speaker and transducers into The Measure Audiometer. Undertaking the verification protocols is as simple as pressing a button and following the automatic process.

Clinics that use REM equipment also see fewer returns in hearing aids, saving significant money.

MISCONCEPTION 2:

REM DOES NOT OFFER ANY BENEFITS FOR MY PRACTICE OR CLINICS

REMs offer many significant benefits for your business. On the commercial side, they are best practice tests demonstrating to your patients that you offer the highest levels of hearing care.

Evidence shows that REM leads to better outcomes and happier patients. That means less return visits and troubleshooting hearing difficulties and more patient loyalty, retention, and recommendations. REMs are effective revenue drivers for any hearing practice. Additionally, offering REMs will differentiate your business from OTC or online providers, as well as other hearing clinics in your area that still don't provide them.

On the clinical side, REMs

- **Increase confidence in fitting accuracy because it is an objective and scientific measurement of the dB SPL in the ear canal.**
- **Show the actual performance of the hearing aids, removing the guesswork from your fittings.**
- **Provide a more accurate initial fit, reducing the risk of overfitting or underfitting.**
- **Increase patient satisfaction and reduce the number of time-intensive follow-up visits, troubleshooting, patient frustrations and returns.**
- **Allow the accurate monitoring of hearing aid performance after the initial fitting to guide ongoing adjustments.**

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MISCONCEPTION 3: REMS TAKE TOO LONG

REMs actually take no more than five minutes when a professional is proficient with the protocols. While initially, it may take a little longer, practice makes perfect.

The Measure software will guide you through the process in a clear step-by-step manner. It can be very useful to use software like this, especially if you've never used REM and are initially feeling unsure of the protocols.

The Measure software also has a helpful nudging feature that guides clinicians through the workflow to ensure best practice standards are consistently followed.



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MISCONCEPTION 4: INSERTING THE PROBE MIGHT HURT THE PATIENT

Another prevalent misconception is that inserting the probe tube could hurt the patient or damage the tympanic membrane (TM). This is highly unlikely since the probe tube is extremely thin, flexible, and made from a very soft material. In addition, the transducer has an integrated measurement tool, helping the hearing provider set the proper depth.

Untangle Fitting Experiences and Increase Patient Comfort

The new Wireless REM Probe provides accurate fittings with fewer cables. With a cabled REM probe, there's a constant battle with getting caught in patients' hair and clothing, and potentially with hearing aids, too. Auditdata's new Wireless REM Probe eliminates these issues and elevates patient comfort.

Enjoy reliability

This solution offers remarkable battery life for precise, seamless measurements and hours of dependable, continuous operation.

Improve care

This innovative technology helps elevate audiology practices and enhance patient satisfaction.

Boost usability

The measurements – and the functionality – are identical to the probes with wires, boosting usability.



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MISCONCEPTION 5: THE PATIENT WON'T LIKE THE OUTPUT

This is a prevalent argument about REMs, but it makes no sense. If you fit a full prescription using REMs at first fit, the patient may not like it because the louder sounds with the hearing aids may be initially jarring. However, that's why acclimatization features exist. Fit the patient to full prescription, undertake REMs to verify it, then set the gain to an acceptable level using the auto acclimatization feature.

It means that you will slowly, but surely, introduce the gain they need over some time. This process will give a patient time to acclimatize to the required gain, and it won't seem as drastic initially.

If you explain the process and the benefits, most patients will be happy to move forward with REM. When you discuss why you're doing REM – and how it will help them – the patient will appreciate that you're delivering the service in the best possible manner for them. Even if the patient gets to full prescription and does not like it, that's not a REM failure.



Everyone is different and some people like a slightly diminished sound. Show your willingness to customize the hearing aids – and the experience – as you care for each patient as an individual.

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The whole point of performing REMs is to figure out what actually goes on, sound-wise, inside the ear canal when the hearing aid is positioned in the patient's ear and active. The measurement that gives us this information is the **Real Ear Aided Response (REAR)**.

Both the hearing aid itself and the acoustics of the ear canal contributes to this total amplification. The process of securing this crucial measurement involves a few steps that are required to obtain a high-quality measurement.



The Measure software offers support in the form of customizable workflows to help the user through the process.

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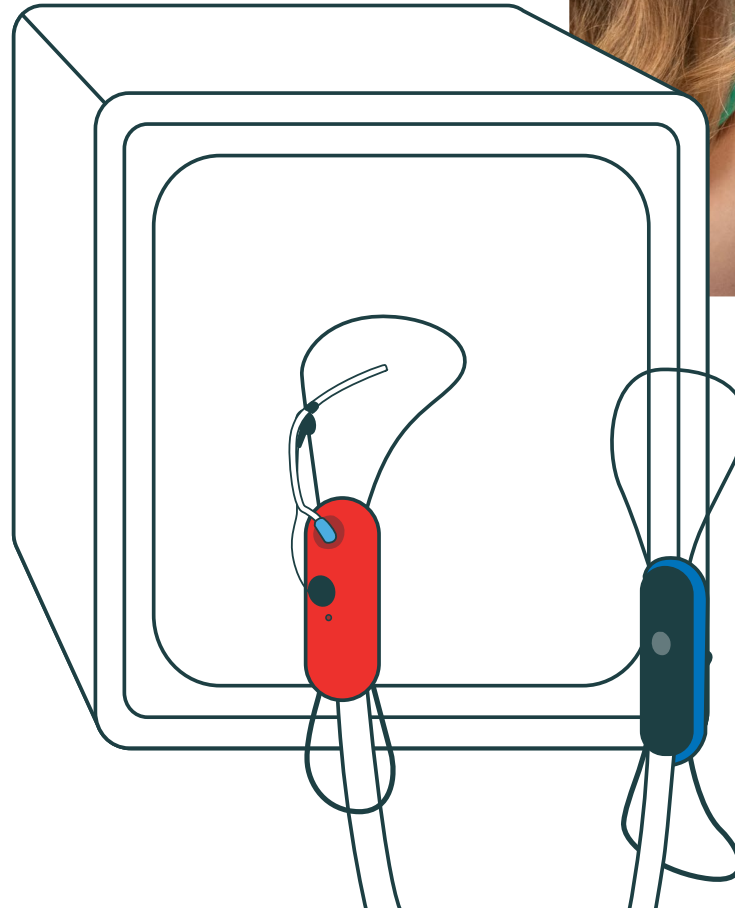
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STEP 1: PREPARATIONS

1. Perform Otoscopy

First of all, ensure proper cleaning procedures are followed and perform an otoscopy on the patient to check for contraindications such as earwax, debris, or discharges in the ear canal.



2. Calibrate Probe tube

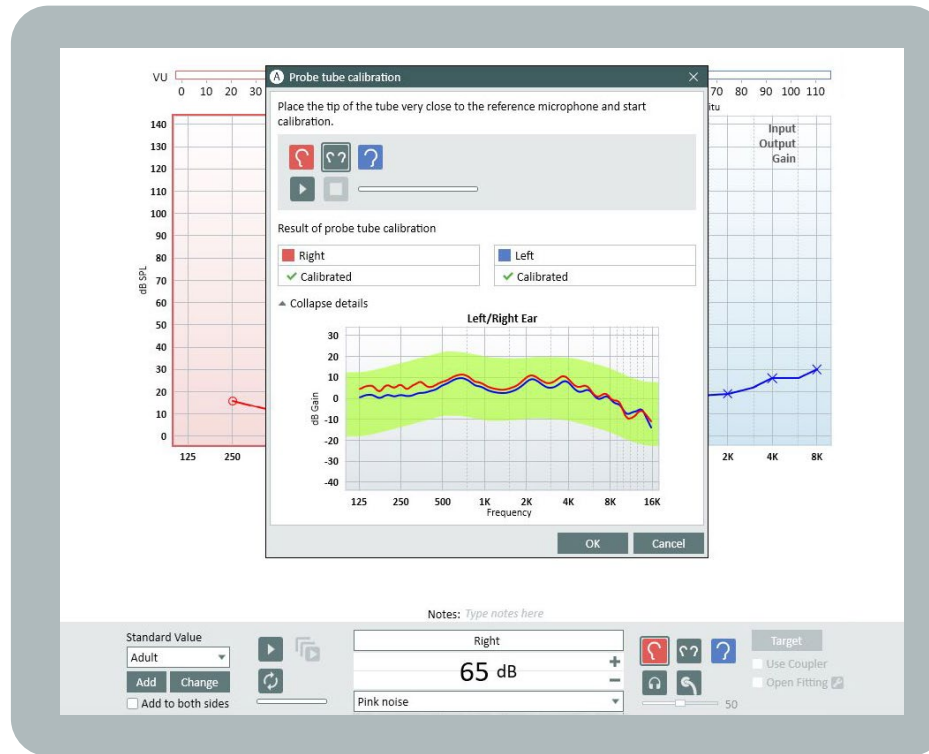
The next step is to calibrate the probe tube. In other words, we need to know how the actual tube distorts the sound we pick up in the ear and then eliminate that distortion.

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Tip

The Measure REM transducer has a groove where you can fixate the probe tube close to the reference microphone, to ensure a proper probe tube calibration.

In Measure, the probe tube calibration is fully automatized and further measurements cannot be commenced unless the calibration is successful. In addition, if the probe tube is blocked or poorly fitted, this will be detected while calibrating.



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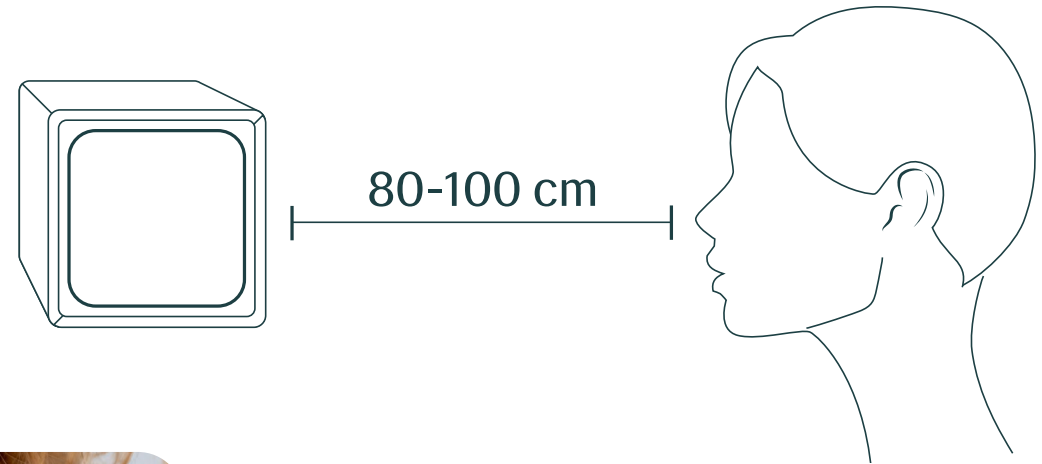
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3. Position patient

After calibration, position the patient facing the REM test speaker. A suitable distance between the patient and the speaker is about 80 – 100 cm.

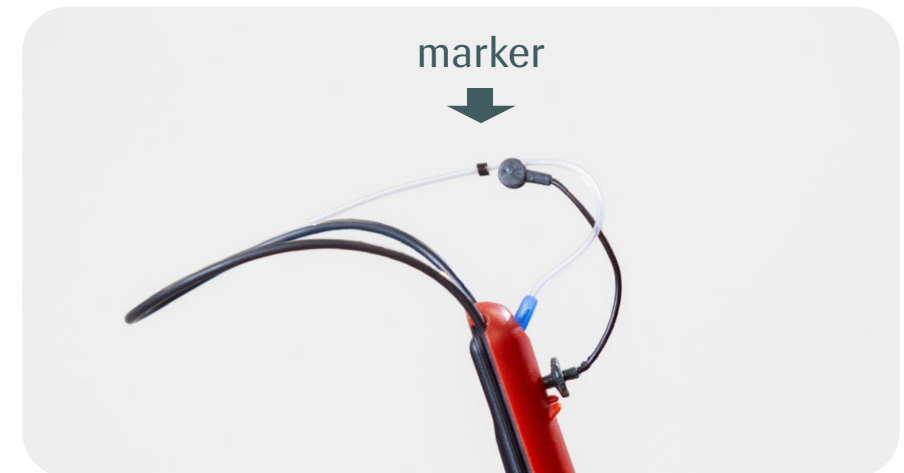


4. Insert probe tube

Gently insert the soft, flexible probe tube into the patient's ear canal. The insertion depth should be roughly 28 mm for females and 30 mm for males.

Tip

The Measure REM probe holder enables uncomplicated, optimal insertion depth of probe tubes, thanks to an adjustable marker on the probe along with an integrated measurement scale on the transducer.



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STEP 2:

ENSURING A PROPER PROBE TUBE PLACEMENT

1. To ensure a proper probe tube placement, we first measure the **Real Ear Unaided Gain**, or **REUG**.
2. Instruct the patient to be quiet during measurement. Any unwanted sound will affect the measurement negatively.
3. The REUG curve should not fall below -5 dB between 4 – 8 kHz. If it does, you should consider repositioning the probe tube.



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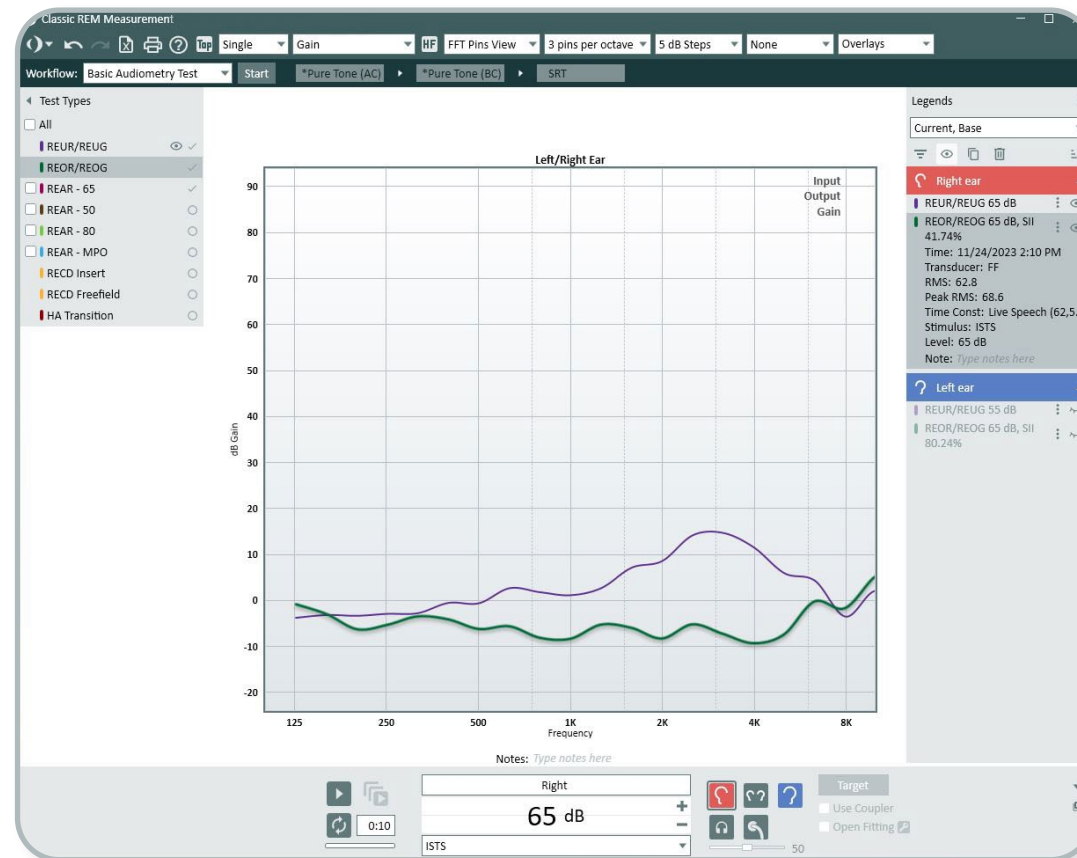
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STEP 3: OPEN OR CLOSED FIT?

1. Next, we need to know if there is sound leakage from the ear canal when the hearing aid earmold or dome is positioned in the ear. This is measured by placing the hearing aid on the ear, positioning the earmold or dome in the ear canal. Ensure that the probe tube placement is not significantly changed when you have fitted the hearing aid onto the ear.
2. Subsequently, make sure the hearing aid is **disabled** and perform a **Real Ear Occluded Gain (REOG)** measurement. The results from this measurement help us to choose whether to do an open-fit or closed-fit measurement in the next step.



If the REOG and REUG are similar across frequencies you can assume there is an open fit, and the corresponding setting should be set in your REM software.

STEP 4:

MEASURING REAR AND ADJUSTING A HEARING AID

We are now ready to perform the measurement that really matters: the **Real Ear Aided Response (REAR)**. By continuously playing our input signal (typically the ISTS signal) and monitoring the REAR while simultaneously adjusting the hearing aid, we can fine-tune the gain to perfectly match the chosen target.

- **Activate the hearing aid and make sure you also activate the feedback cancellation functionality.**
- **Select a target in your fitting software, for example DSL or NAL.**
- **Begin by starting a measurement of the REAR at 65 dB SPL. In the Primus software you can measure REAR in continuous mode: The input ISTS signal is then played continuously, and this allows you to take your time and do hearing aid gain adjustments as you see fit.**
- **Use the hearing aid manufacturer fitting software to adjust the hearing aid so that your REAR curve matches your target within +/- 5 dB SPL across the frequency spectrum.**
- **Repeat this procedure for 50 dB SPL and 80 dB SPL to account for soft and loud sounds.**

There is another measurement called **Real Ear Insertion Gain (REIG)** that previously was commonly used to fit hearing aids with REMs. The REIG is simply the gain provided by the hearing aid, and does not include the natural amplification from the ear canal.

The REIG is calculated as $REIG = REAG - REUG$. However, in recent years the REAR has become the preferred way of monitoring and adjusting ear canal sound pressure levels when fitting hearing aids using REMs. After all, the REAR shows the actual SPL in the ear canal.

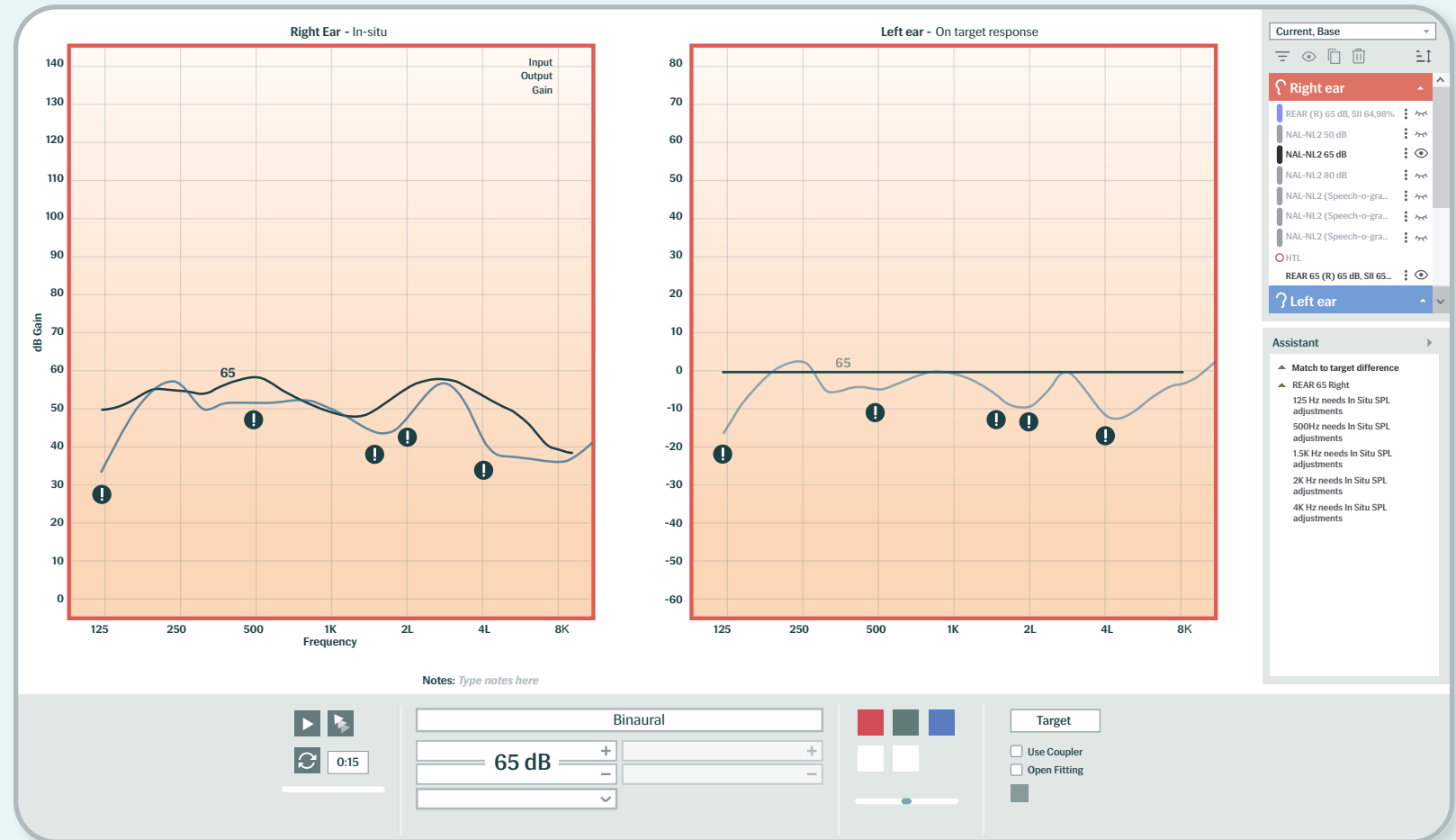
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The Measure REM offers a very useful tool called **Match-to-Target (MTT)**. This functionality warns you if the hearing aid gain deviates too much from the prescribed target during a REM hearing aid fitting. The max deviation can be set by the user for each measured frequency. Both SPL and gain can be used as references.



Auditdata

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Get Started With Real Ear Measurements Today!

With **Real Ear Measurements (REMs)**, you can increase customer satisfaction and clinic efficiency by providing a more accurate hearing instrument fit.

- Reduce the number of return visits
- Reduce the hearing aid return rate
- Increase patient satisfaction
- Increase customer referrals

Contact Us for Demo

