



Fitting Fundamentals with MED-EL

Andrea Hedley-Williams, Clinical Education Manager



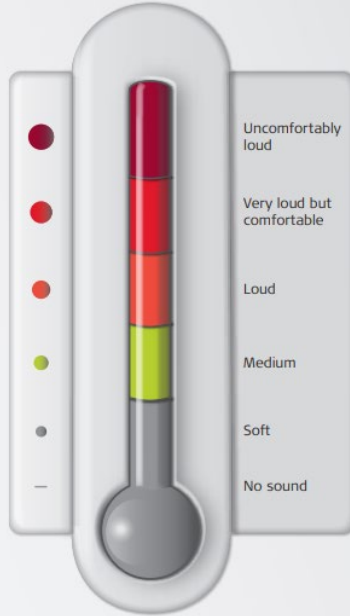
Fitting with MED-EL

- Clinicians' priority (in general) should be to focus on measuring accurate Maximum Comfortable Loudness (MCL) levels.
- All other parameters can potentially be left at default (to start)
- For some patients, other parameters may be important



Loudness Perception Scale

How loud is the sound?



“If MCL is set to Maximum does that mean the patient is hearing at Maximum loudness?”

With MED-EL, patients hear at MCL level when...

- User volume setting is set to 100%
- AND
- Input level is *~105 dB SPL*

At all other times, stimulation occurs below MCL

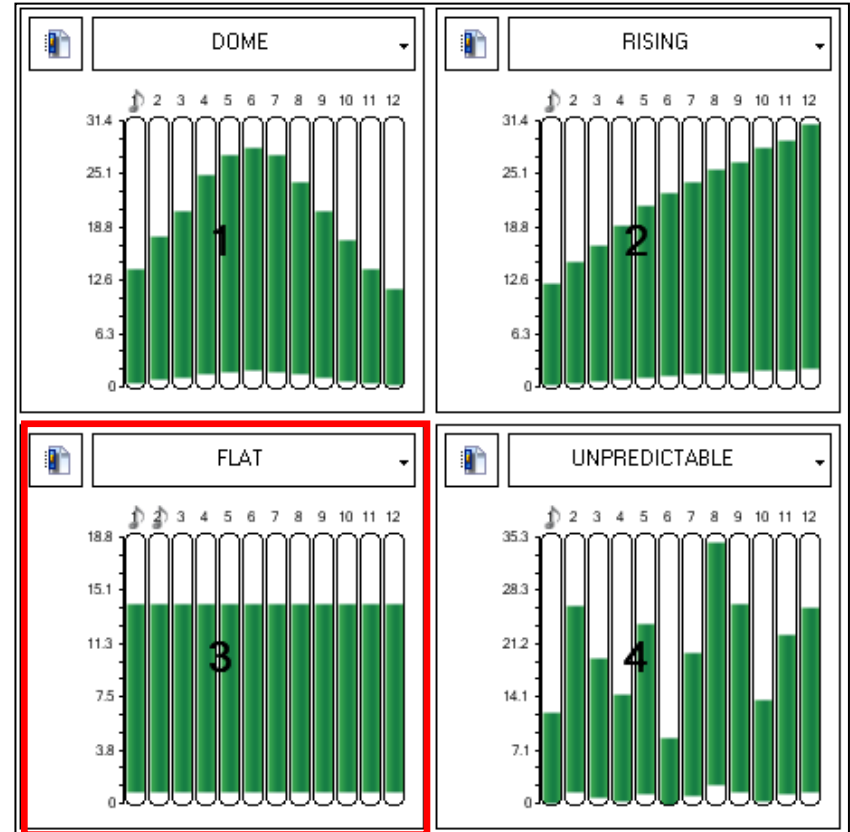


MCL $\neq$ MCL

What Map shape should I expect?

— MCLs generally show

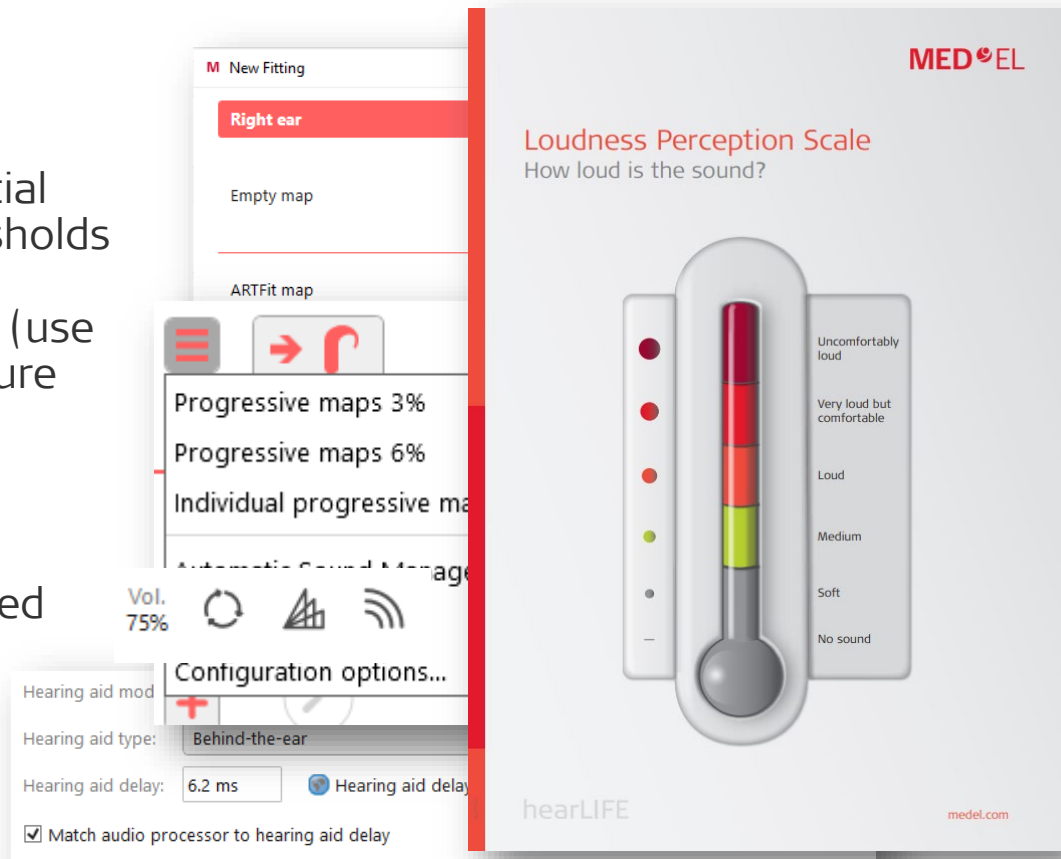
- Flat shape
- Similar pulse durations
- Similar MCLs across channels
- Consistent
- Predictable



Setting MCLs

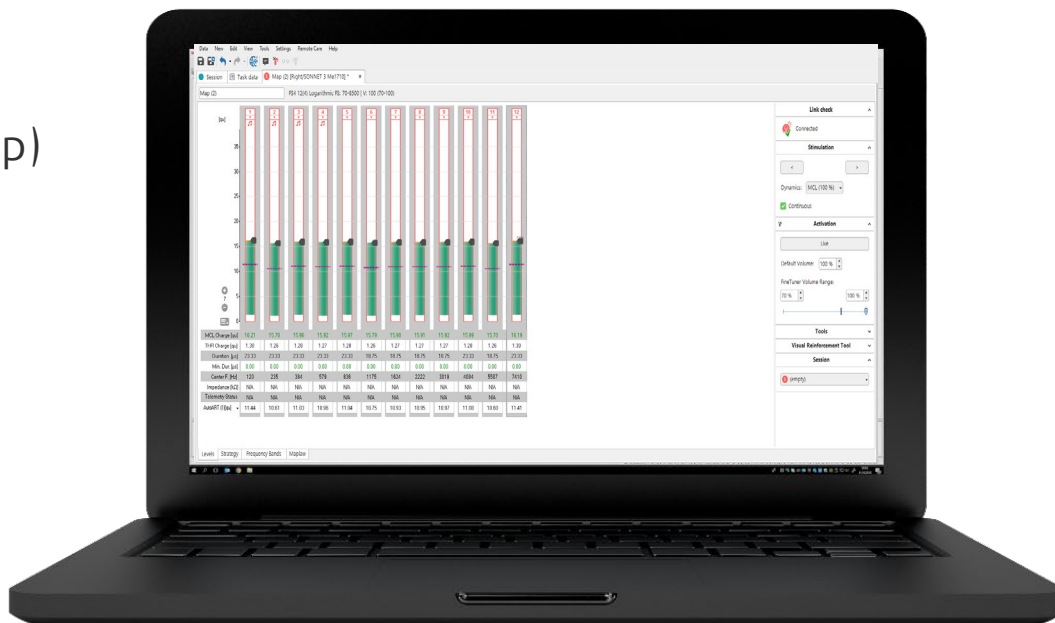
Quick Fit Approaches

- Measure ARTFit or AutoART(initial fitting) MCL's set to ECAP thresholds
- Go live and raise MCLs globally (use Loudness Growth Chart) – Ensure default volume = 100%
- Make progressive maps
- Adjust ASM parameters if desired
- Set bimodal synchronization
- Program processor



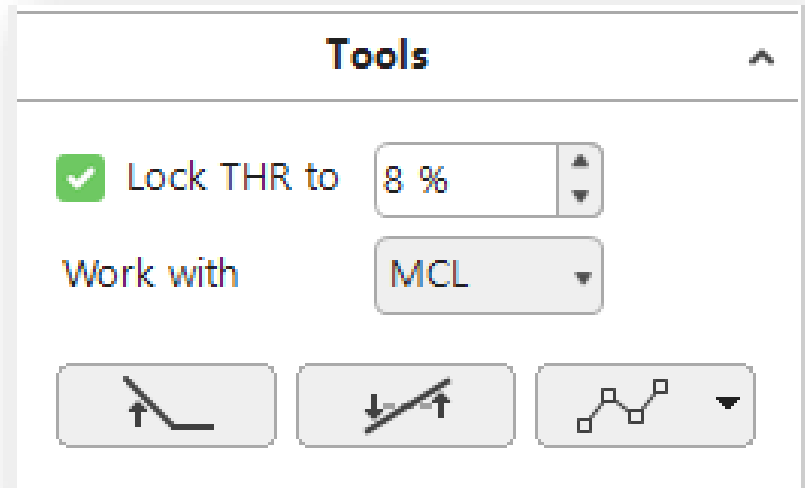
General Fitting Considerations

- Average MCL level:
 - 8 to 15 qu (first fitting)
 - 15 to 25 qu (stabilized map)
- Be careful with high stimulation levels 
- Poor speech discrimination/performance
- Facial Nerve Stimulation (FNS)



Setting Threshold (THR)

- Not a critical parameter for medium to loud speech perception performance
- *Should be inaudible*
- Setting options
 - Measure behaviorally and set below audibility
 - Leave at default of 8% to start



The screenshot shows a software window titled "Tools" with a collapse icon (an upward-pointing chevron) in the top right corner. Inside the window, there is a checked checkbox (a green square with a white checkmark) followed by the text "Lock THR to". To the right of this text is a numeric input field containing "8 %" with up and down arrow buttons on its right side. Below this, the text "Work with" is followed by a dropdown menu currently displaying "MCL". At the bottom of the window, there are three buttons. The first button contains a line graph icon with an upward-pointing arrow. The second button contains a line graph icon with a downward-pointing arrow. The third button contains a line graph icon with a downward-pointing arrow and a small black triangle icon to its right.

Setting Threshold (THR)

Quick Fit Approach

- Unlock THR
- Lower FineTuner Volume range to 0%
- Change Default Volume to 0%
- Change dynamics to THR (0%)
- Ensure all electrodes are selected
- Go Live and increase stim until patient reports 'buzzing' sound
- Decrease T's globally until 'buzzing' goes away (e.g. $\downarrow \uparrow = \pm 3\%$)

The screenshot shows a software interface for setting stimulation parameters. It is divided into three main sections: Stimulation, Activation, and Tools. In the Stimulation section, the 'Dynamics' dropdown is set to 'THR (0 %)' and is circled in red. Below it, the 'Continuous' checkbox is checked. In the Activation section, the 'Live' button is visible. The 'Default Volume' is set to '0 %' and is circled in red. Below that, the 'FineTuner Volume Range' is set from '0 %' to '100 %', with the '0 %' value circled in red. A horizontal slider is positioned below the range. In the Tools section, the 'Lock THR to' checkbox is checked and set to '8 %'. The 'Work with' dropdown is set to 'MCL'. At the bottom, there are three icons: a line graph with an upward arrow, a line graph with a downward arrow, and a network diagram.

Stimulation

< >

Dynamics: THR (0 %) ▾

☒ Continuous

Activation

Live

Default Volume: 0 % ▴ ▾

FineTuner Volume Range:

0 % ▴ ▾ 100 % ▴ ▾

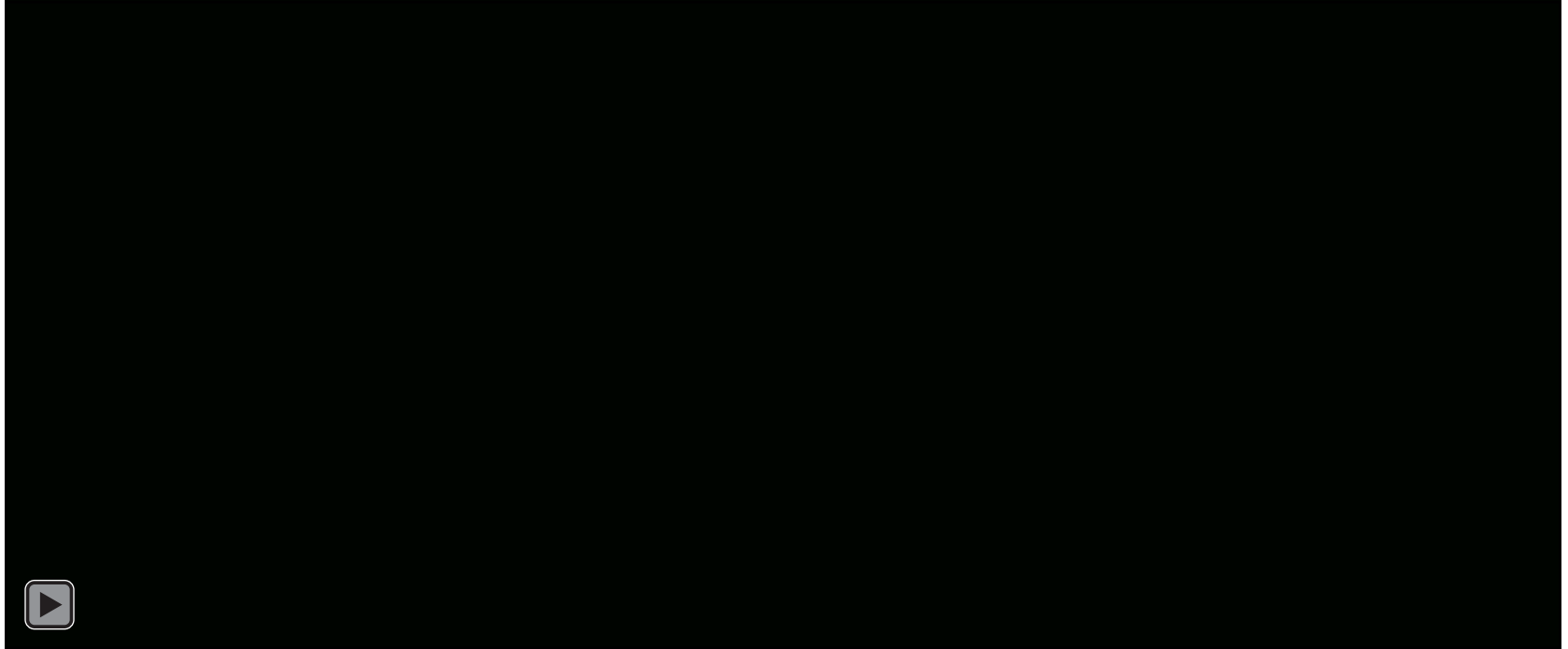
Tools

☒ Lock THR to 8 % ▴ ▾

Work with MCL ▾

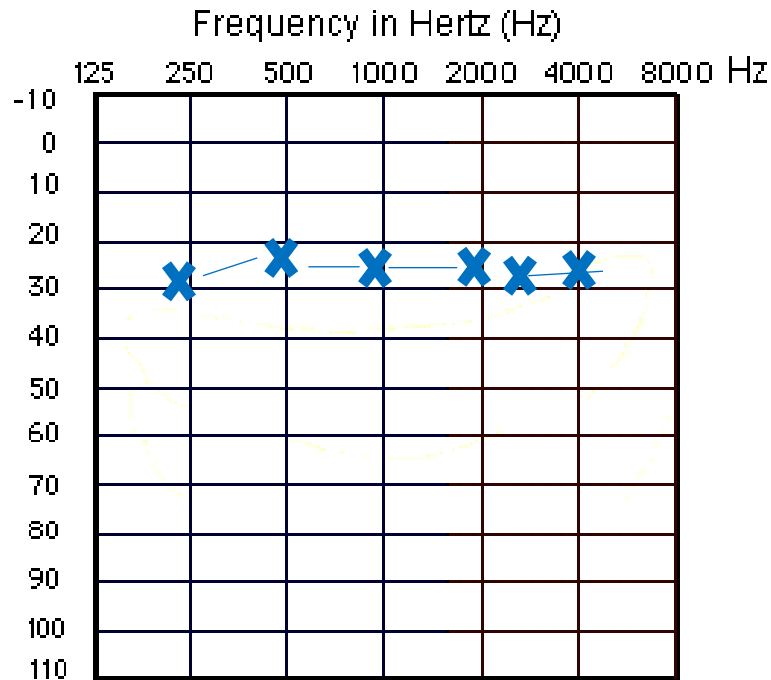
↑ ↘ ↗ ↓

Setting Measured Thresholds (THR)



Sound Field Thresholds

1. Troubleshoot equipment (change mic cover)
2. Ensure MCLs are accurate
3. Measure thresholds (THR)
4. Increase Maplaw
5. Increase (default) sensitivity
(FineTuner Echo or AudioKey app)
6. Increase AGC compression ratio



Modified from Boyd (2006)

Changing Fitting Strategies

- FineHearing™ Strategy is default
- MCLs and THR are strategy-specific
- If you switch strategy in an existing map, reassess MCLs and THRs



Changing Fitting Strategies in SSD Recipients

- 2014 Study - University of Western Australia
- N= 13 SSD recipients provided with 1 FS4 map and 1 FS4-p map
 - Changed between maps daily for 2 weeks
 - BKB-SIN test administered
 - Subjective questionnaire administered
- Although test scores were similar across strategies, *subjective benefit as significantly greater with FS4-p in sound quality and clarity*



FS4 and FS4-p

Stimulation Rate

☒ Use maximal available stimulation rate Current Rate: 1222 pps

☐ Use reduced stimulation rate

CSSS channels

☒ Use to maximize the number of CSSS channels Current CSSS channels: 4

☐ Use frequency limit to reduce number of CSSS channels

Current group size: 1

Compliance Level Control

☒ Auto Adjust

Min. (Strict) Max. (Relaxed)

Volume Mode

Mode:

Channel Interaction Compensation

Apical: Basal:

Min. Max. Min. Max.

Pulse Characteristics

☒ Biphasic pulses Interphase gap:

☐ Triphasic pulses

Levels Strategy Frequency Bands Maplaw

Strategies

- ☐ HDCIS
- ☐ FSP
- ☐ FS4
- ☒ FS4-p

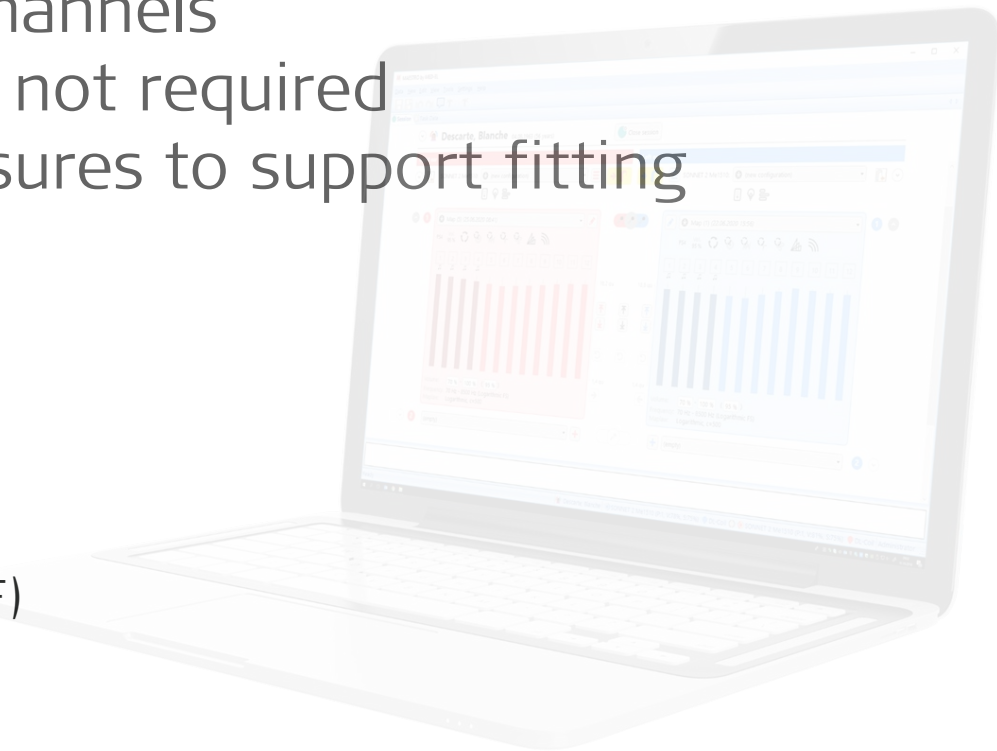
Ease of Fitting

Interpolation between channels

Measuring of thresholds not required

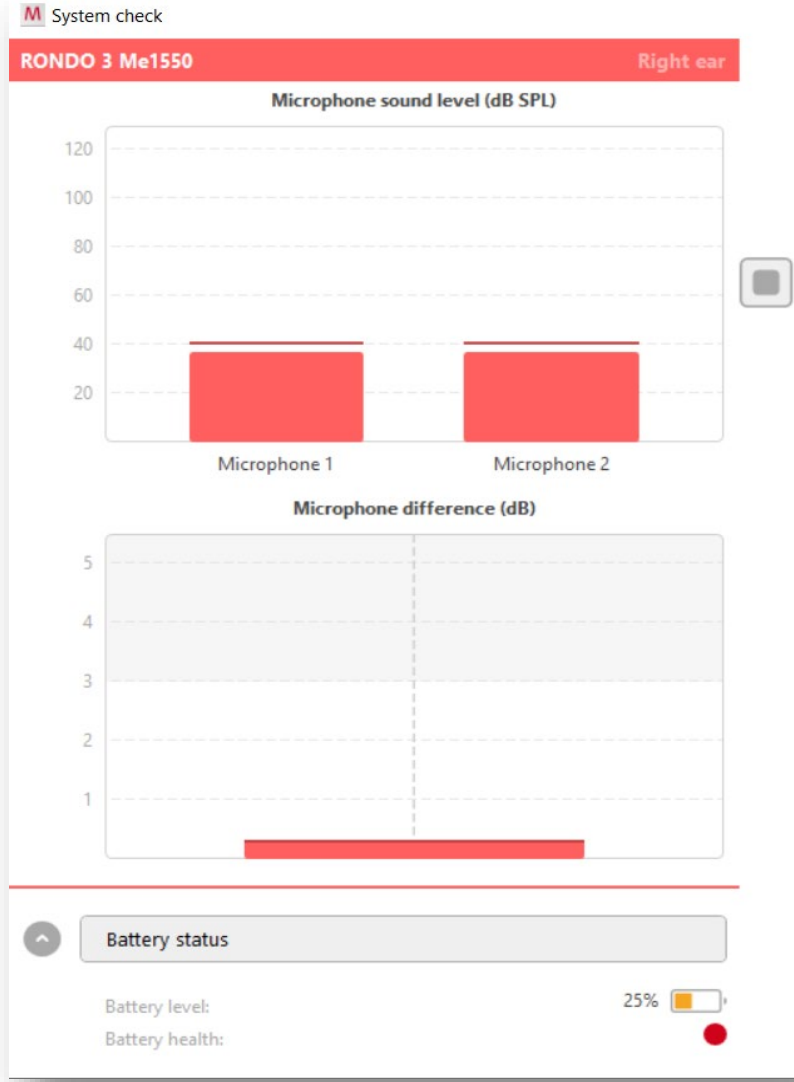
Choice of objective measures to support fitting

- ARTFit
- AutoART
- ESRT
- Anatomy-Based Fitting (ABF)

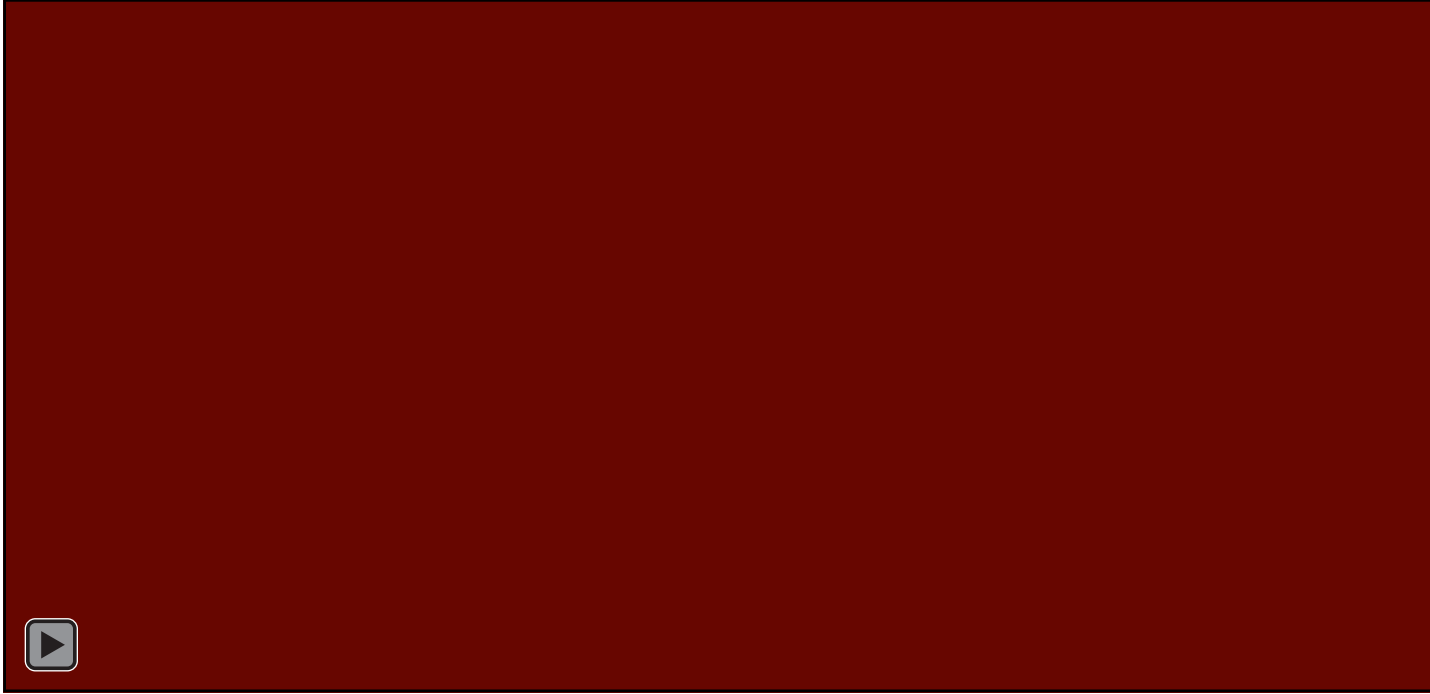


Easy Troubleshooting

- Speech Processor Test Device built into FineTuner Echo
- System check in MAESTRO
- Status indicator lights
- YouTube Videos
- MED-EL Website



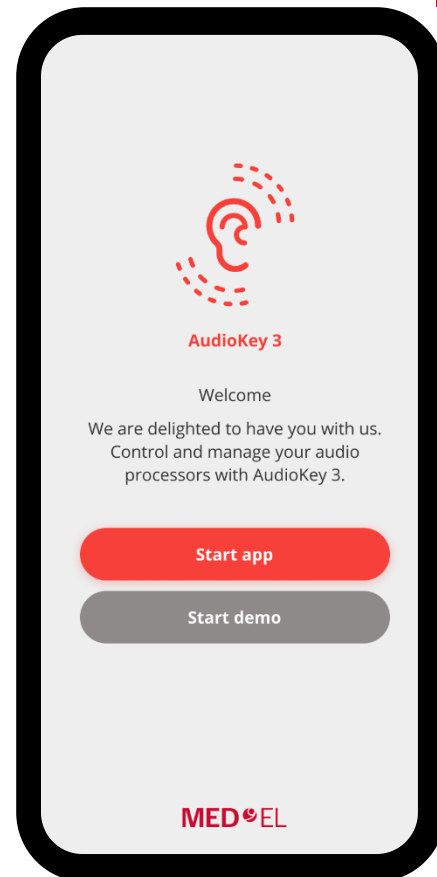
MED-EL Website



AudioKey App

Remote Control & More

- Android & iOS
- Remote control
- Find My Processor
- Bilateral streaming pairing
- Check usage statistics
- Access DualSync for bimodal streaming with a Starkey hearing aid





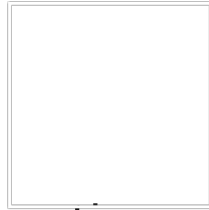
HearCare App

Features



System Checks

- Implant Check
- Audio Processor Checks



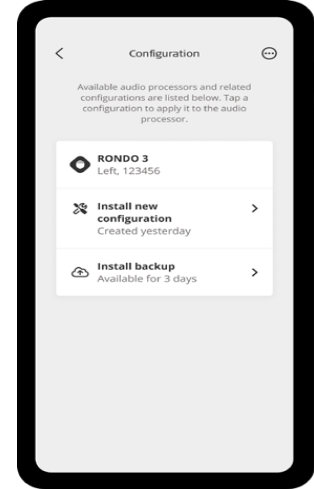
Configuration Backups

- Backup and Install Configurations



Guardian Roles

- Caregiver Management





Find What You Need for Your Hearing Journey

myMED-EL provides you with access to digital tools and resources to support you along the entire hearing journey. Whether you are a recipient, candidate, family member, or hearing care professional, you will find everything you need—for free—all in one convenient place.

Patient Factors to Consider

- Meningitis may prompt ossification, inability to reach MCL, non-auditory percepts including Facial Nerve Stimulation (FNS)
- EVA/LVA may increase propensity for map fluctuations
- Other indicators that may sometime initiate temporary map fluctuations (e.g., middle ear issues, recent medication or health changes, etc.)



Patient Factors to Consider

- Slower than expected progress
- Unreliable reporters
- Inconsistent CI Use/Wear-time
- Long lengths of deafness could increase the risk of slower progress or poorer overall performance
- Abnormal cochlear anatomy or injury



**Just
because you
can doesn't
mean you
should!**

Resources

Tools for Success



AudiologyOnline Webinars



MAESTRO Quick Guides & Compatibility Charts



Sound Quality Questionnaires



Audiology Support Available 8:00am – 8:30pm ET



Your MED-EL Representatives

