

Genie

Tips and Tricks

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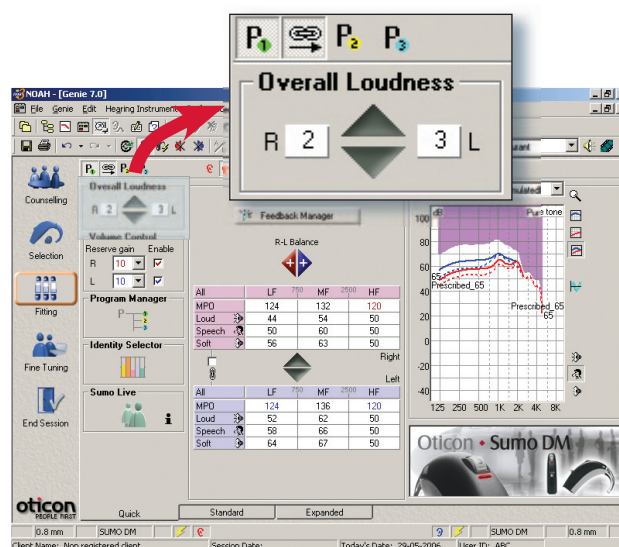
The fitting of adults and children with a severe or profound hearing impairment provides a number of challenges to the audiologist. Two of these challenges revolve around how best to match the loudness expectations of the client and also the appropriateness of directional technology for this population. We will address these two issues through the use of the Overall Loudness Trimmer in SumoDM and the directionality options available in the Oticon Syncro and Safran hearing instruments. All of these solutions are available in Genie 7.0.

Overall Loudness Trimmer in SumoDM

Loudness is a concern for people with severe and profound hearing loss. Some people note their hearing aids are too loud, others may say too soft. Often, the first fine-tuning action is to increase or decrease gain. Unfortunately, in Super Power instruments, the ability to increase or decrease gain is often constrained by compression limits, feedback limits, and dead regions.

To address these issues, we incorporated an Overall Loudness Trimmer (OLT) in Sumo DM. The OLT adjusts loudness across all programs by changing the gain and MPO while preserving unique loudness strategy of each Identity. When the OLT is adjusted, gain and MPO change while maintaining compression and audibility desires for each Identity.

The Overall Loudness Trimmer acts differently than the 'All' button on the trimmer panel. The 'All' trimmer adjusts gain for the specific program (unless multiple programs are linked on the tool bar). Conversely, for the OLT, gain and MPO are adjusted while compression ratios are maintained across rationales or identities. Importantly, changes are applied automatically across all programs as loudness is considered to be a global issue for this population. Importantly, OLT is fully reversible. If the adjustment is too much, you can easily reverse the decision and return to the previous setting.



Genie 7.0 fitting screen highlighting the Overall Loudness Trimmer (OLT) for Sumo DM.

Allowing more directional benefit for people with a severe hearing loss.

Directional microphones provide the only proven method for better speech understanding in noise. For people with a severe hearing loss, two additional issues should be considered

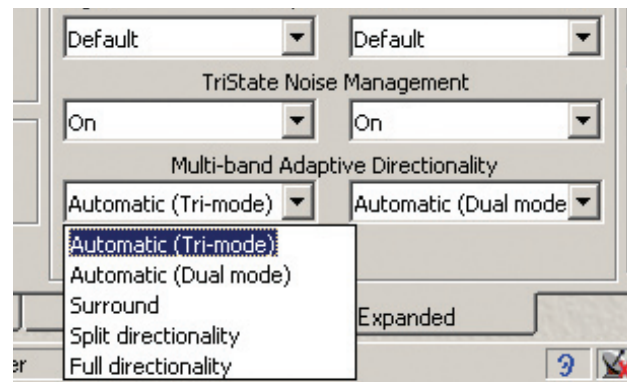
1. Directional roll-off.

One of the problems with directionality is the natural microphone roll-off. For people with a mild to moderate low frequency hearing loss, the easy solution is to automatically compensate for this roll-off with increased gain. Unfortunately, for people with a severe hearing loss, there may be insufficient reserve gain in the hearing instrument to replace this lost gain. In this situation, a loss of audibility occurs in the low frequencies, which is exactly where we wish to preserve audibility for someone with a severe hearing loss. Therefore, the patient may complain that when the hearing aid switches to directional mode it suddenly becomes soft or their speech understanding decreases.

2. Activeness of the automatic system.

When a hearing aid switches between omni and directional microphones modes an audible ‘shift’ may be heard, this ‘shift’ is more salient across the low frequencies. For someone with a severe hearing loss they may perceive this as increased distortion and not appreciate the effect on sound quality.

The Split-directionality mode in Oticon Safran and Syncro allows a solution to this problem. When fitting a severe hearing loss, Genie will configure the automatic directionality in Program 1 to be Dual mode rather than Tri-mode. Dual mode refers to the fact that the full-directional mode is not available. Directionality will therefore switch between the Surround and Split Directional modes only.



Changing the directionality mode for each program is conducted using the directionality controls in the Expanded Panel.

Directional microphones provide significant benefit to hearing impaired people in terms of providing a proven mechanism for better speech understanding in noise.

As Split-directional processes sound up to 1000 Hz in omnidirectional mode, directional roll-off is not an issue. Similarly, the restriction of directionality to above 1000 Hz results in a dramatic reduction in the perceived artefacts of when a directional system shifts from omni into full-directional mode.

Although the above solution works for most patients, some prefer greater directional benefit in more difficult listening situations. In these situations there are two additional alternatives.

1. Rather than changing Identity, change directional mode from dual-mode to tri-mode, allowing the Full directional mode thereby providing potentially more speech intelligibility in the most challenging listening situations.

2. Offer a fixed directional program. Leave Program 1 in dual-mode, but set-up Program 2 as Full directional. When the patient switches from P1 to P2 the hearing aid will be in Full directional providing the greatest directional benefit and the multiband adaptive directionality will simultaneously track and cancel up to four separate noise sources.

When used with suitable patients, both of these solutions will allow the patient to experience greater directional benefit and better speech understanding in noise.