LEONARDO

Stapedius Reflex Detector

Objective Cochlear Implants Mapping and Hearing Aids Fitting

LEONARDO Stapedius Reflex Detector

Precise and reliable
Light, portable with a contemporary design

LEONARDO Stapedius Reflex Detector is a revolutionary PC based system designed to monitor with utmost precision the contraction of the stapedius muscle through a continuous recording that provides real-time variation, in volume, between the insertion tip and the eardrum. LEONARDO is a high-precision device for the cavity volumetric detection from -0,30cc to 5,00cc. The contraction of the stapedius muscle can be induced both with acoustic stimuli and with electric stimuli.

LEONARDO Stapedius Reflex Detector is highly reliable, easy to use thanks to the intuitive interface and it has a modern and light design which allows it to be carried without any efforts.

Mapping Cochlear Implants and Fitting Hearing Aids

Programming cochlear implants can be carried out using subjective or objective tests in order to identify the minimum and the maximum audibility. On this way the specialists build a cochlear map. It is easy to identify the minimum threshold following strategies used with the pure tone audiometry. More difficult is the identification of MCL, especially in children. For that some authors verified the utility of the stapedius reflex thresholds to verify objectively the electrical intensity necessary to reach the most comfortable level; not only but even the profile of the map to use as reference for minimum threshold.

In other words, maximum audibility identified by stapedius reflex, electrode by electrode, allows specialists to build objectively the maximum profile of the map and the same profile can be used as reference for the minimum threshold. It is evident that the same strategy can be used to fit hearing aids, in particular Maximum Power Output and Acoustic gain whenever stapedius reflex can be evoked.

The Maximum Audibility Threshold is identified by LEONARDO Stapedius Reflex Detector loudness scales, which allows to display - on the same screen - the intensity levels from minimum to uncomfortable. Also, the Stapedius reflex is continuously on record, allowing the specialists to not divert attention from the mapping activity of stimulation and immediately identify the threshold of stapedius reflex. The probe is very light and also has been designed ergonomically to avoid the support especially in the first fitting, suitable for very young children, creating maximum comfort for the patients. The objective techniques represent a valuable use for subject which cannot collaborate such as very young children or adults who have been deaf for a long time.

Evoked potentials of the nerve (ECAP) represent, today, the most used method, both because they are detectable in more than 80% of the patients and because they are easy to carry out given that the hardware for the stimulation and recording is installed inside the receiver/stimulator which is driven by a dedicated software. The limits of this measurement are linked to the fact that the objective evocation threshold is almost never the same as the subjective one, but falls within the dynamic field with a wide individual variability. The ECAP provides general information, so it is always necessary to back it with subjective detection methods.

The electrical threshold of the stapedial reflex (ESRT), in turn, is usable in a smaller percentage of the patients (60%), but, when it is possible to be evoke, provides a useful reference, because sufficiently precise, for the maximum audibility threshold and for the profile of the map.

TECHNICAL DATA

INTERNAL DATA STORAGE AND DATA TRANSFER

Probe Tone	85dB SPL @ 226Hz
Precision	< 0,01cc
Measuring Range	From -0,50cc to 5,00cc
Graphic Display	From 0,30cc to -0,50cc
Reflex Detector	Real Time
Reflex Stimuli	Contralateral
Stimuli Frequencies*	From 125Hz to 8000Hz
Max Stimuli Intensity*	110dB HL
Automatic Marker Stimulation	•

*depending on the transducer adopted