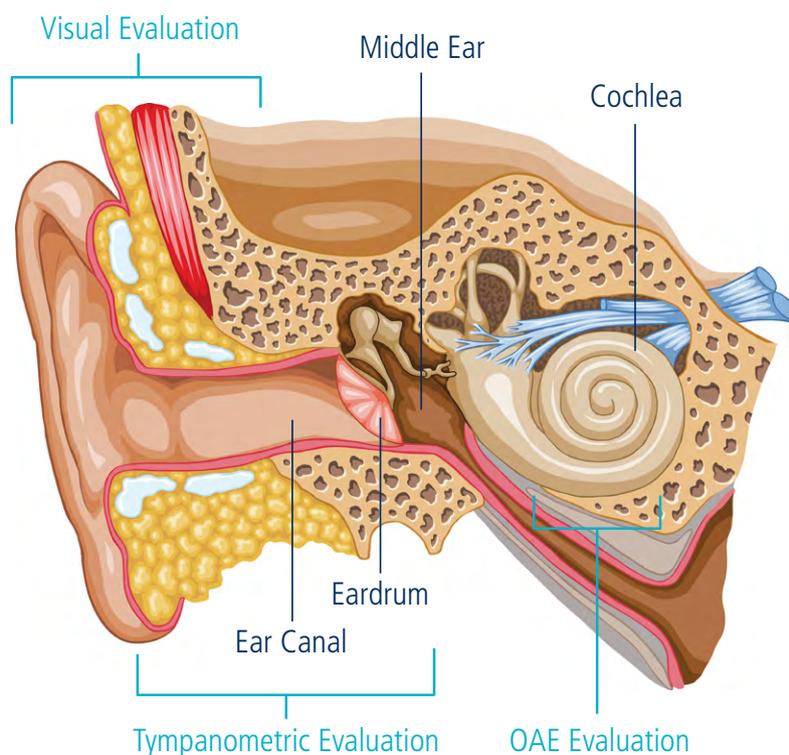Hearing Screening for All Ages

MAICO

ERO•SCAN
Otoacoustic Emission Testing

# ERO•SCAN – Theory

Otoacoustic Emissions

Evoked Otoacoustic Emissions (OAEs) are soft sounds returned by the inner ear as a response to a sound event. The inner ear contains hair cells, which are responsible for transforming the sound signal to a nerve potential, that is processed in the brain. These hair cells respond to sound by vibrating. The vibration produces a very quiet sound, that echoes through the middle ear to the ear canal. With very sensitive microphones, this sound can be measured. TEOAEs are evoked by a transient stimulus, DPOAEs are evoked by a pair of pure tone stimuli.

Visual Evaluation

Middle Ear

Cochlea

Eardrum

Ear Canal

Tympanometric Evaluation

OAE Evaluation

OAEs only occur in a normal functioning cochlea with normal hearing sensitivity. If there is damage to the cochlea (more specifically to the outer hair cells) or middle ear, OAEs will not be present.

OAEs are measured by placing a small probe into the patient's ear. The probe presents a stimulus and records the soft sounds generated in the cochlea. The test does not need any kind of cooperation of the patient and the test result is shown immediately after the test is finished.

With the ERO•SCAN a test result with a PASS means OAEs were detected. A REFER screening result means, that no clear response could be measured. The patient might be at risk for possible hearing loss and therefore communication difficulties. Further diagnostic assessment of the patient's state of hearing is recommended.

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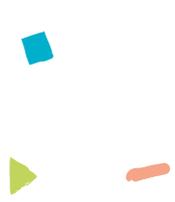
ERO•SCAN – Applications

Newborns

School Children

Toddlers

Adults

Newborn Hearing Screening

Worldwide approximately 1 to 3 in every 1,000 children are born with permanent hearing loss. The measurement of otoacoustic emissions is a standard procedure to screen newborns for hearing loss. Early detection of babies with hearing loss is essential for providing best possible support to them.

Childhood Screening

When entering the school, children need to be screened for hearing impairment again since it is possible that the children develop a hearing impairment over the years. The measurement of otoacoustic emissions offers a fast and objective method to evaluate children's hearing. Early detection of hearing loss in children prevents speech, language, and learning problems.

Diagnostic Evaluation for all Ages

In combination with pure tone audiometry, immittance testing and auditory evoked potentials, otoacoustic emissions are used for detailed diagnostics of hearing impairments. Otoacoustic emissions provide important information on the patient's auditory system to make a reliable diagnosis.

ERO•SCAN – Features & Benefits
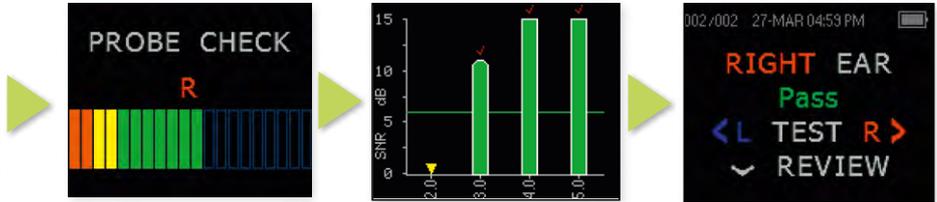
Feedback on the place-
ment of the probe

Detailed user feedback
on the progress of the test

Easyly comprehensible
result screen

Results are Displayed as PASS or REFER

The ERO•SCAN's automated test procedure provides easy to read
results. The operation of ERO•SCAN is extremely intuitive, and
tests can be conducted in less than 30 seconds per ear.

Reliable, Objective Testing

The patented ERO•SCAN noise rejection algorithm allows for re-
liable testing even in moderate background noise. This leads to
fewer false refer results.

Portability

The small and lightweight ERO•SCAN is a hand-held unit with
rechargeable battery. The battery lasts for more than a thousand
tests between charges. It allows you to move from room to room
with ease.

Optimized Probe

The ergonomic micro-probe is perfect for attaining a tight ear
seal with no effort. Made of aluminum the probe is extremely
endurable. The single-use probe tubes prevent the system from
being clogged. The system can be used with a wide range of
different ear tips in different sizes.

Managing and Reporting Data

Results can be printed via a wireless printer directly from the
ERO•SCAN or a connected computer, by using the optional
Sessions PC software. The dedicated HearSIM™ database
allows managing of newborn hearing screening results as well as
exporting of screening results to HiTrack or Oz .

ERO•SCAN Versions

Screening

The ERO•SCAN with screening functionality provides rapid measurement and documentation of DPOAEs or TEOAEs at multiple frequencies. It is an ideal choice for professionals involved in a hearing screening program. It provides a quick assessment of the inner ear with easily readable PASS or REFER outcomes. The ERO•SCAN can be used for all age groups and is mostly dedicated for screening newborns, infants, pre-school and nursery children.

- Qualified protocols built into the device
- 2 predefined protocols for DPOAE or TEOAE screening
- Optional HearSIM™ database with data export to state tracking systems, HiTrack or Oz.

Diagnostic

The diagnostic ERO•SCAN version is an efficient testing tool for otologists, audiologists, otolaryngologists and pediatricians with need of advanced applications. Additional test protocols are available and customizable. The diagnostic version offers a wide range of application from follow-up diagnosis of 'refer' – screenings to the early detection of noise-induced hearing loss or auditory monitoring.

- DPOAE testing from 1.5 to 12 kHz
- Customizable Pass criteria, stimulus level and averaging time
- 5 DPOAE and 3 TEOAE diagnostic protocols available
- Optional Sessions PC software for electronic data management

ERO•SCAN Software Options

Choose between Sessions and HearSIM™ PC software solutions, depending on the field of application. This extends the functionality of the small and lightweight ERO•SCAN. Sessions is a single patient result viewer for a large range of MAICO device settings and can be integrated easily into patient databases or other EMR systems. Meanwhile HearSIM™ is the dedicated software solution for Newborn Hearing Screening and supports results of the ERO•SCAN Screener version only.
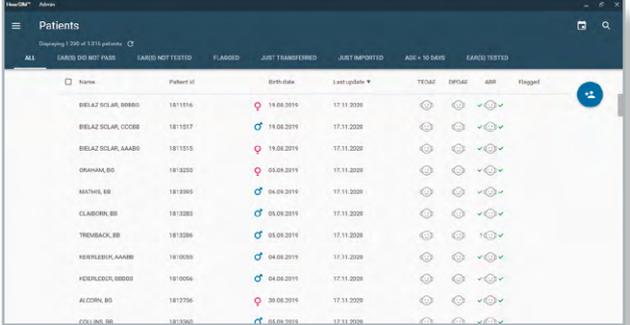
Sessions

The ERO•SCAN device is fully supported by the MAICO Sessions PC software for convenient evaluation and management of ERO•SCAN OAE test results. OAE test data can be easily transfered from the device to a PC via wireless connection or USB cable. All results of your audiometry, tympanometry and OAE assessments are stored together. Sessions can be used along with OtoAccess or NOAH patient databases to also transfer patient lists from your database to the ERO•SCAN. Alternatively use Sessions as standalone solution or to integrate in your EMR system via dedicated interface options. This gives you the mean to create detailed reports that can be easily filed or printed. You can also create 'paperless' office by saving the test results as a PDF for electronic filing or email.
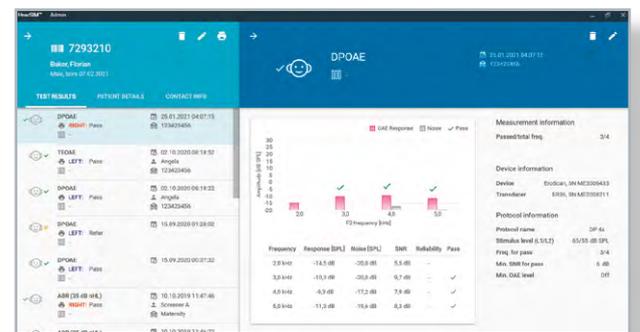
HearSIM™

Newborn Hearing Screening results of the ERO•SCAN Screener version can be transferred to HearSIM for review, printing and tracking purposes. HearSIM™ is intuitive to operate and provides you an overview of the screening status of all patients. Depending on your workflow, HearSIM™ allows to transfer patients to the device to select them for testing or to assign tests when stored without patient details. Add the required tracking data for follow-up on referrals and export the screening results in several formats. Choose to print your test results from your PC or store as PDF file.

Features at a glance

- Store, view and manage patient information
- Store, view and manage test data from ERO•SCAN Screener
- Assign tests to patients after transfer
- Transfer names of patients requiring testing to ERO•SCAN
- Import a patient list from a file
- Print test results on a standard PC-compatible printer
- Export patient and test data (HiTrack, OZ Systems, CSV and XML formats supported)
- Manage user accounts
- Backup and restore the database

ERO•SCAN – Components, Accessories & Software

ERO•SCAN device	Probe	Carrying case	Ear tip box

Thermal printer	Sessions PC software	Noah Database	HearSIM™ PC software

Components and accessories vary by region and configuration.

Disposables

Sanibel™ Supply is the exclusive supplier of MAICO ERO•SCAN disposables. Use only Sanibel™ disposables to achive optimal test results.

MAICO ♥ **Sanibel***

Watch our ERO•SCAN videos

MAICO

Find your local distributor.

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