Measure

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1 Introduction

The latest release, Measure 6.3.0, delivers numerous enhancements across multiple modules, focusing on improved efficiency, accuracy, and user experience. This update introduces the **Quality Insights (QI) module**, refinements to **REM/SM**, **tympanometry**, **hearing instrument testing (HIT)**, and various other optimizations aimed at making clinical workflows smoother and more effective.

Below is a comprehensive overview of the key updates in this release.

2 New Quality Insights (QI) Module

A major addition to this release is the Quality Insights (QI) module, designed to make session quality assessment more efficient. Accessible from the left-hand navigation pane, this module allows users to evaluate session quality at a glance without manually reviewing individual records.

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File V	/iew Tools Hel	P												
) († 🗳	E 🗕 🤅		• •										
@'	Session List													Î
	10/26/2023 • • • • •	10/30/2023 © ¶	10/31/2023 © ¶	11/2/2023 ¶	11/14/2023 © du	11/24/2023	11/27/2023 ම © %	2/20/2 %	2024 2/2	3/2024	2/27/2024 ම ඉ	7/25/2024 • •	7/28/2024 ≣© ⊡	1/13/202
	② Client Data								Audion	netry				1/15/2025
	Client Number NOAH Patient I First Name Last Name Date of Birth Age Gender	00000 d 1 John Doe 6/19/ 46 Male	001 (1978						Right	11	® Ø Left	Speech		
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	100								D Speech	n Mapping	g			11/14/2023
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Status 🤅	٥								مع مع الم	UD HW: I	Not Connecte	d HITHW:	Not Connecte	ed User: ABC

Key Features

The module provides an overview of workflows and individual measurements, allowing users to:

- **Track Workflow Completion** See if a workflow was selected during a session and whether each step was completed, skipped, or partially completed.
- Review Comments View justifications on skipped steps or abandoned workflows for better context.
- **Check Rule Compliance** Identify any unmet rules that were applied to a measurement.
- **Monitor Masking Assistant Alerts** Detect unresolved alerts and see which rules were triggered.
- **Assess Ambient Noise Levels** Check if high ambient noise was detected during stimulus presentation.
- **Assess Quality of Fittings –** Check if REUG measurements were within expected range and if amplification matched target.

Session Data Overview

For each session saved in Measure, users can view:

• **Session Details:** Date, time, username, workflow title, and test modules saved.

Quality Insights Data	Duration	User name	User note
Screening (Completed)	15/10/2024 15:09:30 - 15:14:35	ABC	Patient ran out of time

• **Workflow Completion:** For each started workflow, step names, whether they were mandatory, and their completion status (active, done, incomplete, skipped, or not done) can be viewed.

New Customer (Completed)	08/01/2025 16:01:02 - 09/01/2025 12:59:39	ABC	а	
Step Name	Step Type	Mandatory?	Status	Comment
Otoscopy	Otoscopy	No	Done	
Tympanometry	Tympanometry	No	Done	
HTL	Pure Tone Audiometry	Yes	Not done	_
BCL	Pure Tone Audiometry	No	Not done	

• **Measurement Insights:** For each test type with rules enabled in test definitions, any unresolved quality assistant warnings will be displayed here.

Audiometry	8/28/2024 3:31:08 PM - 3:31:08 PM ABC	1
Test type	Assistant rule	Assistant warning
HTL	Completeness warnings	4 kHz missing
HTL	Masking recommended for	8 kHz
BCL	Completeness warnings	500 Hz missing
BCL	Completeness warnings	2 kHz missing
BCL	Completeness warnings	4 kHz missing
BCL	Masking recommended for	1 kHz

Navigation & Customization

- Users can **sort** items by *Latest* or *Oldest*.
- Filters allow selection of specific workflow types and measurements.
- Expand all/Collapse all buttons enable quick viewing of detailed information.
- The module can be **hidden** via Tools > Settings > Workflow > Enable Modules.

This module helps users quickly review session quality, reducing the time spent manually checking past records.

3 REUG Assist

The new **REUR Assist** feature in REM/SM helps clinicians verify probe tube placement accuracy by comparing **real-ear unaided gain (REUG)** measurements against expected values.

Key Benefits

- **Visual Overlay** Expected REUG values are displayed on the measurement graph.
- Assist Hints Highlights deviations that may indicate incorrect probe tube positioning.
- Historical Warnings Past REUG assist warnings can be reviewed for patterns.



Disclaimer: The expected REUG range is based on data from normal, healthy adult ears. It is not intended for use with paediatric patients. Before performing REM, clinicians should always examine the patient's ear. If a patient has anatomical variations or conditions affecting the ear, their REUG measurements may fall outside the expected range. In such cases, clinicians must rely on their professional judgment to assess placement and interpret results accordingly.

How it works

REUG Assist can be configured in the **Editor for Test Definitions** in the **REUG Assist** tab.

A Editor Fo	or Test Definition								×
General	Curve Style	REUG Assist							
🖌 Enable d	overlay								
Gain View,	dB								
1 Upper	125 250 9 7	500 750	1K 8 7	1.5K	2K	3K 2	¥К б	бК 12	8K 8
Lower	-1 -2	-2 -	2 -1	. 4	8	6	4	-3	-4
🖌 Enable I	hints								
✓ 125	≥ 250 ≥ 50	00 💽 750	✓ 1K	2 1.5K	2K 🔽	ЗК 💽	4K 🗸	6K	✓ 8K

- **Enable overlay** Displays the REUG overlay on the graph when viewing gain measurements. Default overlay values are provided but can be customized.
- **Enable hints** Provides visual hints on the graph at specified frequencies if the measured REUG falls outside the defined overlay parameters. This option is only available when the overlay is enabled.



- The overlay remains accessible regardless of whether assist hints are enabled.
- When assist hints are enabled, users can select specific frequencies where deviations should be highlighted directly on the graph.
- REUG assist hints are also displayed in the Assistant panel on the right side of the measurement window.



• Historical REUG assist warnings are available when reviewing past REM & SM sessions.

4 Audiogram Transformation for NAL NL2 Target Calculation

To improve target calculations, this version of software introduces audiogram transformation rules, which estimate missing air and bone conduction thresholds.

To enable this feature, go to **Settings > Presets > Target Rule**, select **NAL-NL2** and select **Enable Audiogram Transformation for NAL NL2 Target Calculation**. This feature is disabled by default.

Settings			-	ο×					
ANM Default Values	Presets - Target Rule								
Dia Audiometry	Drosots	Process							
Default Views	Default (DSL v5)		New	Preset					
1 Controls	Default (NAL-NL1)			The second s					
S Measurement Standard	Default (NAL-NL2)		Delete	preset					
S PTA/CPT	Default (1/2 Gain)	Default (1/2 Gain)							
Severity	Default (1/3 Gain)								
Talk Over									
Monitoring									
Speech Measurement									
Normative Curves	Preset Name Default (NAL-NL2)			^					
Client Response	Target Rule NAL-NL2								
E REM	inger nore								
Display Settings	NAL Settings		_						
Target Settings	Limiting	Off	Ŧ						
🗁 ніт	CT of Wide Band	52							
Measurement Settings	Language	Non-Tonal	*						
🗁 Presets	Hearing Aid Experience	Experienced	*						
Standard REUR Presets	Control Microphone Orientation	0*	v						
Average RECD	Tubing	Libby 4	- -						
绞 Target Rule	Number Of Channels								
HL/MHA Simulation	Number Of Channels 1 +								
Ctoscopy	Enable Audiogram Transform	nation for INAL INLZ Target Calculation							
Camera Settings	 Default for automatic target ca 	alculation		U.					
			Save	Cancel					

Air Conduction (AC) Estimation:

- **Extrapolation** is used for edge frequencies, assigning the missing value to match the nearest available data point.
- **Interpolation** for intermediate frequencies, applying weighted averages based on the proximity of neighboring data points.

Bone Conduction (BC) Estimation:

- Uses **contralateral BC data** (unmasked or masked) when applicable, ensuring thresholds do not exceed AC values.
- Equates BC to AC for mandatory frequencies when no BC data is available.

These enhancements ensure more reliable hearing aid fitting by aligning calculated targets with audiologists' interpretations of audiograms, following guidelines from the National Acoustics Laboratory and maintaining consistency with NAL NL2 algorithm requirements.

5 Improvements

Enhanced Display and Reporting for Tympanometry

Navigating and reviewing tympanometry results is now more intuitive.

• **Improved Session Organization** – Tympanometry sessions are now displayed as individual segments based on the date and time they were saved, making it easier to distinguish between different sessions.

(A) Measure					
File View Tools Help					
	a 0	e e e			
O John Doe					TYMPANOMETRY
6/19/1978	Measurement H	listory			
Male	Latest	Ŧ			View
Eerste bezoek 💌	1/6/2025	Tympanometry	Reflex		
P Otoscopy	4:01:57 PM	Right 226 Hz 4:01 PM	Right 4 point(s) 4:01 PM		
•		Left 226 Hz 4:01 PM	Left 5 point(s) 4:01 PM		
P Tympanometry					
P Pure Ione					
speech	1/6/2025	Tympanometry	Reflex		
(O P Hearing Loss Simul	3:59:03 PM	Right 226 Hz 3:59 PM			
- P Master Hearing Ald		Left 220 HZ 3.39 PW			
REUR/REUG					
V № REAR - 65					
□ P Speech Mapping					
Percentile 65 dB 🚽	1/6/2025	Tympanometry	Reflex		
👔 🕫 Full-on Gain	3:58:01 PM	Right 226 Hz 3:58 PM	Right 4 point(s) 3:58 PM		
P Frequency Response					
A					
\otimes					
	1/6/2025	Tympanometry	Reflex		
	3:55:49 PM	Left 226 Hz 3:55 PM	Left 5 point(s) 3:55 PM		
Status 🥝		·		AUD HW: Not Connected	HIT HW: Not Connected User: AB

- **TM Admittance** Peak admittance values of the eardrum have been added to tympanogram tables.
- Clearer Legends:
 - Unselected sessions are dimmed following the format similar to Pure Tone for better clarity.
 - Information on unsupported measurements is now included in the legend. Users can see the test type and a note indicating that it is not supported for *Eustachian Intact* and *Eustachian Perforated* measurement types.
- **Compensated vs. Not Compensated Measurements** In the top right corner of each graph, users can now see whether the tympanogram is compensated or not.

Improved Reporting

Tympanometry and reflex results can now be included in audiometry reports:

A Reports		X				
🗁 Audiometry	Audiometry report					
Client report	Client Data					
SISI report	Show Social Security Number	-				
Audiometry report	Show Client ID					
Audiometry report Big PT Au	Show Client name and address	SS				
E REM	Header					
REM report	Enable header on top of the r	report				
🗁 Speech Mapping	Report Data					
Speech Mapping report	Pure Tone Audiogram View	Single 🔹				
🗁 НІТ	Pure Tone Audiogram Range	Standard 🔹				
HIT report	Stenger results	Hide				
PDF Forms	Speech Audiogram	Graph				
PDF Sample	Tump	Show				
	тупр	SHOW				
	AI	Show •				
	Pure Tone Audiogram Overlays	None				
	Action date					
	Pure Tone Audiogram	12/4/2024 8:30 PM 🔹				
	Speech Audiogram	1/21/2025 3:59 PM 🔹				
	Tympanometry	1/6/2025 3:59 PM 🔹				
	Use for Noah fast data view Comment					
	<u>L</u>	Save as default				
		Preview Print Close				

- A *Tymp* field allows users to include tympanometry data in reports.
- In the *Action Date* section, the most recent session is selected by default. Users can manually select a different tympanometry session from a dropdown menu if needed.

Display of Serial Numbers and Microphone Type

The following enhancements allow users to easily identify the specific equipment used for each measurement:

• Serial number of the fitting unit is stored and displayed below the graphs.



• **Serial number of each transducer** is displayed in the Legends for saved measurement data, including base audiograms.



• In REM & SM, the **microphone type** used in the measurement is also stored and displayed in the Legends.

[AUD] Ambient noise monitoring (ANM) microphones

Hover over the ANM icon to view the **type of microphone** currently in use.



In a live ANM information window, click **Details** to expand the view and access new functions:

- Select a microphone from a dropdown list of connected devices.
- View the standard used (can be configured in Tools > Settings > ANM Default Values).



[AUD] Autotest Safety Maximum Level

A new Maximum Level setting (default: 95 dB) for Autotest helps prevent excessive exposure, particularly for patients with hyperacusis.

A Editor For Test Definition		×				
General Frequencies Curve Styles	Rules	Auto Test				
Threshold determination	2 out	of 3 ascents				
Initial descending step, dB	15					
Initial ascending step, dB	10					
Descending step, dB	10	10				
Ascending step, dB	5	5				
Minimum level, dB	-10					
Maximum level, dB	95					
Fixed-length tone, ms	1000					

Clinicians performing automated screenings to confirm whether a patient's hearing falls within a specific range may adjust this limit. Reducing the maximum level and increasing the minimum level can help shorten test duration while maintaining effective threshold determination.

This setting does not affect the Extended Range feature.

[AUD] Option to Disable Default Level Reset in Speech Testing

A new setting allows users to prevent test level reset when switching between left, right, or binaural modes during speech testing.

By default, when a test type is selected, the initial level is set according to test settings. Now, if **Disable Default Level Reset** is enabled in Test Definitions, the levels for Channel 1 and Channel 2 remain unchanged when switching ear sides within the same test type.

This option can be configured in:

• Tools > Test Definitions

A Editor For	Test Definition								×
General	Curve Styles	Masking assist	tant						
Name	SRT								
Description									
Test Type	SRT		Aided Co	onditi	on Unaided	ł	Ŧ		
Shortcut	F2	Ū	SRT Type	9	SRT		-		
Stimulus	Word scoring								
Stimulus				N	lasking		Maski	ng	~
Signal Ty	pe	Speech	Ŧ] :	Sound			Speech Noise	
Transduc	er	Insert Ear	ohone 🔻] •	Transducer			Insert Earphone	e 🔻
Default E	ar Side	Right	v]	Masking Side	;		Opposite	T
Default L	evel, dB	50 -	+		Default Level	l, dB		50 - +	
💽 Disabl	e default level rese	et			Use maski	ing from C	D		
Use P1	TA Offset, dB				Masking pres	sentation		Continuous	T
					Activate m	nasking by	/ defaul	lt	
Other Sett	ings			Sp	beech CD				
Step Leve	el	5 dB	Ŧ]	CD Scheme			(None)	Ŧ
🗌 Disabl	e SRT 50% calculat	ion			Word List			(None)	-
								ок с	Cancel

• **Measurement Window** – Select a test type, then click *Edit Test Definition*.

A Editor For Test Definiti	ion X
Default Level, dB	50 - +
Disable default level r	reset
🗌 Use PTA Offset, dB	
Word Counting	
Reset word score w	hen level is changed
Word Presentation	Continuous
Use phonemes	
Pause, sec	4 - +
Word Counting Mode	Only Incorrect
Automatically contin	nue to next word list
Word List	
Word List Type	Mono Syllabic Words
	OK Cancel

This feature provides more control over speech testing conditions and minimizes the need for manual level adjustments.

[AUD] Improved Monitor Headset Sound for Talk Back Microphone

With this update, new equalizer settings are automatically applied to reduce noise and enhance sound clarity when using the Talk Back (TB) microphone.

What's Improved?

Previously, users had to manually reset and apply equalizer settings to reduce noise. Now, optimized settings are applied by default for new installations and upgrades (if no prior adjustments were made).

New Equalizer Settings

The following values are applied to ensure a clearer listening experience:



[AUD] New Option: Use Ambient Noise Input for Talk Back Microphone

To provide greater flexibility, users can now choose to connect the Talk Back microphone to either the standard Talk Back input or the Ambient Noise Monitoring input on the fitting unit.

A Measurement Setting			×
Talk Over	Talk Back		
TO Level	Start Talk Back with Talk Over		
65 dB HL	Talk Back Input	Talk Back Microphone 🛛 🔺	
-40 -30 -20 -10 0 10	TB Level	Talk Back Microphone Ambient Microphone	_
Monitoring			_
Monitoring Left Level			_
Monitoring Right Level		ć	S
Play sound in both ears			
		Equalize	er
		OK Cance	ł

A new Talk Back Input dropdown lets users choose between:

- Talk Back Microphone (default)
- Ambient Microphone

The selected option is remembered by the software and applied at startup.

[AUD] Speech Banana & Letters on Printed Reports

When printing audiograms, users can now choose to include the speech banana overlay and/or speech letter overlay.

A Reports		×
🗁 Audiometry	Audiometry report	
Client report	Client Data	
SISI report	Show Social Security Number	
Audiometry report	Show Client ID	
Audiometry report Big PT Au	Show Client name and addres	ŝŝ
🗁 REM	Header	
REM report	Enable header on top of the r	report
🗁 Speech Mapping	Report Data	
Speech Mapping report	Pure Tone Audiogram View	Single 🔹
🗁 HIT	Pure Tone Audiogram Range	Standard 🔹
HIT report	Stenger results	Hide 🔹
PDF Forms	Speech Audiogram	Graph 🔹
	Tymp	Show •
	AI	Show -
	Pure Tone Audiogram Overlays	Multiple selected
	Action date	 Speech Banana Speech Letters
	Pure Tone Audiogram	1/15/2025 5:25 PM 🔹
	Speech Audiogram	1/15/2025 5:25 PM 🔹
	Tympanometry	Select date 🔹
	Use for Noah fast data view	
	Comment	
		Save as default
		Preview Print Close

These overlays provide a clearer visual explanation of how hearing loss impacts the ability to hear different speech sounds, helping patients better understand their results.

[REM & SM] Presets Appearance

- Preset names now include their target rule, e.g., "Preset Name (Target Rule)"
- If changes are made to a manual preset from the measurement settings, its name is labeled "(*edited*)" in both the dropdown menu and Legends.

Legends	•
Current, Base	
- O D	ΞĴ
? Right ear	
New Preset (Manual) (edited) 65 dB Time: 2/21/2025 3:40 PM Stimulus: Speech Noise Level: 65 dB Note:	•
O HTL	۲

[REM & SM] Probe tube calibration data

Users can now view probe tube calibration details for each REM/SM session by clicking the Calibrate icon S.

A Probe tube calibration	×
Result of probe tube calibration	
Right	Left
Calibrated on:	Calibrated on:
2/21/2025 6:36 PM	2/21/2025 6:36 PM
	OK Cancel

This enhancement ensures that clinicians can verify whether probe tube calibration was performed during past sessions, improving confidence in measurement accuracy and historical record-keeping.

Calibration & License Notifications

Device serial numbers are now included in calibration and license notifications for easy identification.

[HIT] Multiple OSPL90 Test Types

Measure now supports multiple OSPL90 test types in Hearing Instrument Testing (HIT), allowing for more efficient output measurements.

 Test Types
▲ OSPL90
OSPL90
OSPL90-1
OSPL90-2

- In Test Definitons, custom names can be assigned to OSPL90 measurements for better identification.
- The order of OSPL90 measurements in HIT Test Definitions matches the Test Types panel in HIT for consistency.
- Custom OSPL90 names appear in *Test Types* and *Legends* for clear result interpretation.
- A *Multi-Play* button enables sequential execution of selected OSPL90 tests, reducing manual steps.

7 Release Notes 6.3.0

Besides mentioned above, this version of the Measure software contains the following enhancements:

BKB CD Scheme Available for Speech Testing

Users can now select the BKB CD scheme in media files, allowing it to be used for speech testing.

UI Enhancements

Bug fixes

Dependencies

This version requires NOAH 4.7 or later. To use the Primus Panel under Auditbase System, Auditbase version 4.17.01 or higher is required.

Installation

The uninstallation of the previous version is done automatically.

To upgrade to Measure 6.3.0:

- 1. Run the set-up file: **Setup_Measure_6_3_0.exe**.
- 2. Follow the instructions on the screen.

8 Support

For further information, please visit <u>www.auditdata.com</u>.