



Cello

PC & iPad CONTROLLED DIAGNOSTIC AUDIOMETER

CLASSIFICATION

IEC 60645-1: Type 2 Class A/AE
ANSI S3.6: Type 2A/2AE
IEC 60645-1 / ANSI S3.6: EHF (Extended High Frequency) Compliant (with HF option)

AVAILABLE SIGNALS

Stimulus: pure tone, warble tone
2 external inputs and USB audio for speech audiometry
MIC input for live speech audiometry
Masking: NBN, WN, SN

SIGNALS SPECIFICATION

Attenuator step: 1, 2 and 5 dB
Presentation: Continuous, Pulsed (0.5, 1 and 2 Hz)
Warble: 5 Hz sin wave modulating signal

AVAILABLE OUTPUTS AND TRANSDUCERS

AC: Headphones (TDH-39 / DD45)
HF headphones (HDA-300 / DD450)
Insert earphones (ER-3 / IP30)
BC: B-71 bone vibrator
Free field
Insert masking earphone: IME-100

AVAILABLE TESTS

- Pure Tone audiometry (HL and UCL)
- Auto threshold (modified Hughson-Westlake)
- HF audiometry (optional): from 8 to 20 kHz (18 and 20 kHz not displayed in the audiogram)
- Speech audiometry (SRT, WRS, MCL, and UCL)
- SISI test
- Stenger, with pure tone or speech stimulation
- 2 independent channels Master Hearing Aid
- QuickSIN® test (optional)
- Visual Reinforcement Audiometry (VRA) and Conditioned Play Audiometry (CPA) test (optional) with video reinforces

PURE TONE: FREQUENCIES AND MAXIMUM LEVELS (dB HL)

Freq. (Hz)	AC	AC DD450	AC HDA-300 **	AC ER-3 IP30	AC ER-5 **	BC	FF*
125	80	85	85	90	90	-	75
250	100	100	100	105	100	45	85
500	110	110	120	110	110	65	95
750	115	110	120	115	120	70	95
1.000	120	110	120	120	120	75	95
1.500	120	110	110	120	120	80	95
2.000	120	110	110	120	115	80	95
3.000	120	110	110	120	115	75	95
4.000	120	105	110	110	110	75	95
6.000	105	100	100	100	100	55	90
8.000	95	90	100	90	90	50	85

9.000	-	90	90	-	-	-	80
10.000	-	90	90	-	-	-	80
11.200	-	90	90	-	-	-	80
12.500	-	80	80	-	-	-	80
14.000	-	70	70	-	-	-	80
16.000	-	50	60	-	-	-	50
18.000	-	110 dB SPL	100 dB SPL	-	-	-	-
20.000	-	110 dB SPL	90 dB SPL	-	-	-	-

(* The values refer to "normal" range; add 10 dB to each value in case of "extended range" option selected

(**) No more available for purchasing but supported

SPEECH AUDIOMETRY: MAXIMUM LEVELS (dB HL)

AC*	AC DD450	AC HDA-300 **	AC ER-3 IP30	AC ER-5 **	BC	FF
100	90	100	100	100	60	Normal: 75 Extended: 85

(* Reduce by 20dB in case of free field equivalent filter activation.

(**) No more available for purchasing but supported

PATIENT – OPERATOR COMMUNICATION

Talk over: external microphone included
Talk back: through monitor headset (included); patient microphone included
Patient response trigger

MONITOR SIGNAL

Both channels monitored through the monitor headset (included)

CALIBRATION

Validity: 12 months
Separated calibration tables for each type of transducer (AC, AC-INS, AC-HF, INS-MASK, BC, FF)
All the parameters stored in the device through a dedicated software

COMPUTER INTERFACE

Connection: USB (driverless)
Compatible software: Inventis Maestro
Minimum requirements: refer to Maestro software specifications

INTERFACING WITH THE iPad

Through Bluetooth 4 connection (needs Aero option).
Requires iPad 3 or successive
Dedicated app freely downloadable from the Apple App Store
Only Pure Tone and Speech tests available

POWER SUPPLY

Maximum consumption: 10 Watts
Power supply: 6V, 2A cont., through an external medical grade 100-240 Vac 50/60 Hz power supply



MECHANICS

Size (WxDxH): 30.8 x 21.7 x 6.7 cm / 12.1 x 8.5 x 2.5 in
Weight: 1.3 kg / 2.9 lbs

APPLICABLE STANDARDS

Pure tone audiometry: IEC 60645-1, ANSI S3.6
Speech audiometry: IEC 60645-1, ANSI S3.6
High Frequency audiometry: IEC 60645-1, ANSI S3.6
Calibration: ISO 389-1, ISO 389-2, ISO 389-3, ISO 389-5, ISO 389-7
Electrical safety: IEC 60601-1, Class I type BF
EMC: IEC 60601-1-2

CE CERTIFICATE

93/42/EEC classification: Class IIa
Classification rule (Annex IX, 93/42/EEC): 10
Notified body: TÜV SÜD Product Service GmbH (0123)

PRODUCT CODES

10558: Cello – Computer controlled diagnostic audiometer
10559: Cello Aero – Computer /iPad controlled diagnostic audiometer

INCLUDED PARTS

- DD45 or TDH-39 supra-aural headphones
- B71 bone vibrator
- Patient response switch
- Monitor headset with boom microphone
- Clip-on microphone for patient-to-operator communication
- Medical grade power supply
- USB connection cable
- User manual
- Inventis Software Suite
- Four magnetic covers

OPTIONAL ACCESSORIES (with order code)

- 10833: ER-3C insert earphones
- 11748: IP30 insert earphones
- 10177: IME-100 insert masking earphone
- 10179: Amplivox Audiocups noise excluding enclosures for TDH-39 and DD45 headphones
- 11259: Silenta Supermax noise excluding enclosures for TDH-39 / DD45 headphones
- 10181: Desktop microphone for live speech tests
- 10180: Cable set for sound booths with jack sockets
- 10557: Cable set for sound booths with RCA sockets
- 10266: One active speaker FBT J 5A (230V model)
- 10544: One active speaker FBT J 5A (120V model)
- 10560: High-Frequency extension package for Cello
- 10533: QuickSIN® test license
- 10562: Video-VRA extension package for Cello. Includes the license code and the desktop switch.

Cello is developed by:

INVENTIS s.r.l.

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