

Sound Quality Transducers CORTEX head Manikin

Key features...



The increasing interest for the "Sound Perception and Sound Quality" aspects of Sound and Vibration raises the issue of selecting the "right transducers" to achieve the recording and playback closest to human sound perception. Dealing with Sound Perception requires understanding the importance of acoustic design and features in Acoustic Heads.

The features of 01dB-Metravib CORTEX manikin take in account all issues related to the external and medium ears and to the human hearing mechanism, such as:

role of Ear canal and concha vs. source direction, natural amplification of ear canal, microphone location, shock-absorbing mounting of microphones, torso specifications,and much more.

Additional technical information on Acoustic manikin is available in Standard IEC 959.

External ear geometry

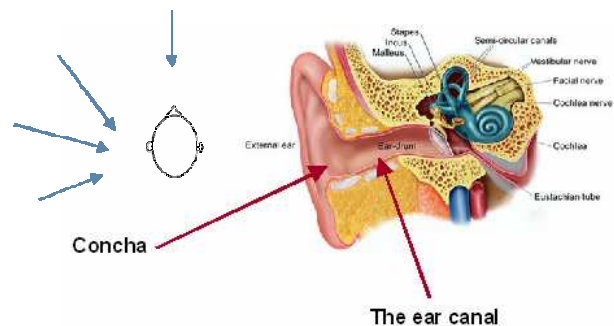
IEC 959 specifies the ears' dimension and tolerances. The precision of the geometry heavily influences high frequency response.



CORTEX head ear

Direction equalization

Ear canal and concha play a definite role in the detection of the source direction by the human ear. It is then necessary to perform a specific equalization, which is mechanically achieved in the CORTEX head due to its design. De facto: the microphones are located so as to correspond to the position of the tympanic membrane.



Microphones position

According to IEC959 the microphones must be located in the eardrums. Other manufacturers have opted to place the microphones at the entrance of the Ear Canal... which is not compliant with IEC959! As a consequence, the natural amplification of the ear canal is artificially amplified. Conversely the microphone positions in CORTEX head perfectly comply with IEC959.

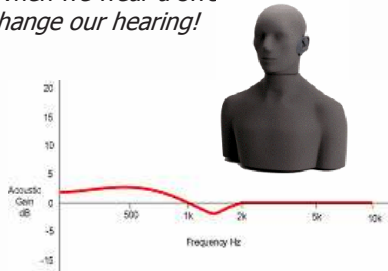


CORTEX head Microphone position

Technical Notes

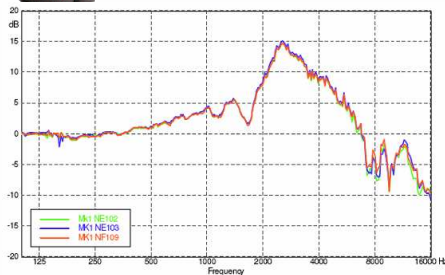
Artificial Torso

According to the IEC959 an artificial head needs an artificial Torso as realistic as possible and that's what is effectively provided with CORTEX head. Normally, there's no need to have an artificial cloth! *When we wear a sweater that does not change our hearing!*



Repeatability

01dB-Metravib guaranties repeatable measurements among any artificial heads we're producing: i.e. any produced CORTEX head will deliver the same response curve.



Microphone shock Absorber

Sophisticated Silicon Dampers are part of the CORTEX head design with the aim to cancel vibrations transmitted through the manikin body.



Calibration Process

In order to perform acoustic calibration, the artificial ears have to be removed and replaced easily! Additionally, it is better to avoid using a calibration adaptor as this requires a calibration correction. In the CORTEX head the microphone calibrator fits exactly with size & shape and the ear can be removed and/or replaced at the same position – no calibration correction needed.



Specifications comparison

In the following table we have summarized some features comparing 01dB-Metravib Cortex head and artificial heads produced by 2 other suppliers (information taken from published technical data). As it appears with no doubt a CORTEX head has superior specifications. In addition, 01dB-Metravib is offering a special equalization to let our CORTEX head become "identical" with other artificial head in order to give to customers a possibility to compare new data, acquired using CORTEX head, and data acquired with other manikins.

Features	01dB-Metravib	Manufacturer A	Manufacturer B
Equalization	Good	Fair	Unknown
Geometry & realism	Highest	Poor	Fair
Micro. Position	Close to perfection	Poor	Poor
Torso design	Good	Poor	Good
Shock absorption	Good	Unknown	Unknown
Repeatability	Good and proven	Unknown	Unknown
Calibration	Easy	Poor	Fair
IEC 959	Fully compliant	None compliant	Unknown

The presented characteristics are subject to change without notice. Rev:03/2007

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