

of traceability to the International System of Units of infrasound measurements

The primary standard for sound pressure is defined through the reciprocity calibration method specified in the International Electrotechnical Commission (IEC) Standard 61094-2:2009. This method is based on the use of closed couplers and is routinely applied by the National Metrology Institutes for a large frequency range; however, infrasonic frequencies below 2 Hz have not been explored until recently. This is revealed by the absence of calibration and measurement capabilities (CMCs) in the Bureau International des Poids et Mesures (BIPM) database for frequencies below 2 Hz. Although the extension to infrasound frequencies of the reciprocity calibration method can be achieved theoretically, this extension implies implementation problems because of the reciprocity calibration setup (microphones and couplers), initially not intended for such use. In particular, the low signal-to-noise ratios and the acoustic leakages involved at very low frequencies limit the use of the reciprocity method requiring an alternative method. In this paper, is presented first the international organisation of the metrology ensuring a single coherent system of measurements throughout the world. In a second step, is presented an alternative method based on a laser pistonphone aiming to achieve the traceability to the International System of Units (SI) of infrasound measurements and how this traceability can be recognised internationally.

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