

source and the tympanic membrane. This indicator is based on a measurement of the resonance characteristic, or freedom of motion, of the tympanic membrane or other ear component being analyzed. One such measurement is the rate of change of the acoustic reflectance with respect to frequency. Since resonance typically causes a null to appear in the acoustic reflectance curve, this measurement of the rate of change is particularly informative if measured around the null. The rate of change measured around the null may be presented as an angle measurement, a gradient or slope measurement, a width measurement, or other form of measurement of the shape of the null. In one embodiment, the steepest slopes on either side of a null are used to define an angle, herein called a spectral gradient. Diagnosis of an ear pathology, such as abnormal pressure or presence of fluid in the middle ear or such as conductive hearing loss, may be based on this measure alone. Because of the rate of change of an acoustic reflectance measurement is relatively constant for a given ear, regardless of the quality of the line of sight to the tympanic membrane, the effect, if any, of user training on such measurements is significantly reduced. Accordingly, the process and device of the invention are useful in many kinds of diagnostic situations with respect to ear pathology, but particularly in those involving screening of the ears of young children for common pathologies such as otitis media, even by untrained personnel.