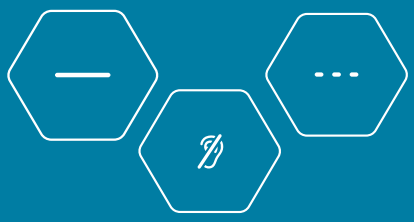
DATA SHEET

Jacoti DuoTone®

Hearing Test Procedure

Self-Running And Self-Administered Pure Tone Audiometry



Overview

DuoTone® employs pairs of pure-tone stimuli at different frequencies. Different frequency pairs are tested (along with an additional silent condition) which determine pure-tone thresholds from 125Hz up to 12000Hz. The procedure is intended to determine hearing thresholds for both frequencies of the pure-tone stimuli.

State-of-the-art

The measurement of pure tone hearing thresholds stands as an integral component of clinical hearing assessment protocols. Audiometry assumes a pivotal role not only in diagnosis but also in the fitting of hearing devices, when necessary. This procedure gauges an individual's capacity to detect (pure) tones across an array of selected frequencies. Notably, frequencies spanning 500 to 4,000 Hz assume significance due to their alignment with the frequency range of everyday conversational speech.

In a clinical context, audiometry emerges as a subjective, behavioral assessment of hearing thresholds, hinging on the patient's response to pure tone stimuli. These stimuli are administered by the clinical audiologist, prompting the test person – typically the patient – to respond through actions like button pressing, hand raising, vocal acknowledgment, or, for pediatric cases, interactive participation in play scenarios.

The quality of measured pure tone thresholds, the minimal sound level detected by the patient, is influenced not solely by the patient's attentiveness and cooperation, but also by the audiologist's expertise.

Behavioural audiometry is the gold standard for diagnostic procedures in clinics, but it is time consuming and requires special equipment and the presence of an audiologist.

The DuoTone® procedure

The Duotone Hearing Test procedure involves three types of stimuli:

1. Stimulus A: A continuous tone with a lower frequency.
2. Stimulus B: An intermittent tone with a higher frequency, presented in short bursts.
3. Stimulus C: A completely silent stimulus.

The test unfolds through a series of consecutive trials featuring pairs of Stimuli A and B. For instance, a combination might include a continuous tone at 500Hz (Stimulus A) and an intermittent tone at 3kHz (Stimulus B).

A crucial aspect of this test is the role of the "silent" stimulus (Stimulus C). This component ensures that the subject is aware that not all trials will feature audible sounds. When either Stimulus A or Stimulus B is presented at an intensity level below the individual's auditory threshold, the subject refrains from guessing between the two audible stimuli. Instead, they choose Stimulus C, representing silence.

Science-based hearing test

DuoTone® is a patented hearing test method and has proven to be a valid procedure to measure the pure tone hearing thresholds as no statistically significant difference was found between the standard clinical procedure and the DuoTone procedure.

- Hazan, A., Luberadzka, J., Rivilla, J., Snik, A., Albers, B., Méndez, N., Wack, N., Paytuvi, O., Zarowski, A., Offeciers, E., & Kinsbergen, J. (2022). Home-Based Audiometry With a Smartphone App: Reliable Results?
- Method and device for conducting a pure tone audiometry screening. WO2013041538A1

Jacoti HearingKit® use DuoTone® hearing test results to personalise audio according to the hearing characteristics of each user.

About Jacoti

Jacoti BV | Hearing Technologies is a science-based company that develops hearing enhancement solutions embeddable in consumer devices. Its flagship product, Jacoti Inside, optimizes audio to each individual hearing requirement from consumer technologies to fully-fledged medical devices.

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