

Instruction Manual for Model AWA6163 Artificial Ear

I. Introduction

The AWA6163 artificial ear is an acoustic coupler designed to simulate the acoustic characteristics of the human ear; it is used in conjunction with a $\phi 23.77$ mm (1-inch) pressure-field condenser measurement microphone (Model AWA14412) and a preamplifier (Model AWA14604). When paired with appropriate audio measurement and analysis instrumentation, it is used to measure the sensitivity of electroacoustic devices such as receivers and headphones. It is primarily utilized for audiometer calibration and hearing aid testing. The AWA6163 is designed and manufactured in accordance with IEC 60318-3 (formerly IEC 303 and NBS9A standards); consequently, it is also referred to as an IEC 303 artificial ear. Due to its coupler cavity volume of 5.78 cm^3 , it is commonly known as a "6 cc coupler".



Figure 1 Photograph of the simulated ear

II. Artificial Ear Installation:

The artificial ear is designed for use with a sound-pressure type measurement microphone and a preamplifier. The installation sequence is as follows:

1. Mount the AWA14412 onto the mounting bracket.
2. Screw the AWA6163 artificial ear onto the threaded connector.
3. Attach the preamplifier to the mounting bracket from the side.

III. Artificial Ear Usage:

1. The earphone under test must be pressed tightly against the artificial ear to eliminate sound leakage while maintaining a constant external coupling cavity volume of 5.78 cm^3 . If necessary, apply a thin layer of wax or grease between the sealing bushing and the earphone to prevent sound leakage.

2. Place the earphone under test onto the artificial ear without sound leakage, applying a force of 4 – 5 N (excluding the weight of the device itself).

3. The device under test must not come into contact with the sloped surface of the artificial ear; it should be positioned directly above it, with the center of its sound output aperture aligned with the axis of the artificial ear.

Note: The measurement microphone within the artificial ear is a precision instrument; handle it with care. Do not unscrew the protective cap or touch the diaphragm with your hands, as this may damage the diaphragm.

IV. Main Technical Specifications:

1. Frequency range: 100 – 8000 Hz.
2. Frequency response accuracy: $\leq \pm 0.5 \text{ dB}$ (200 Hz – 5000 Hz), $\leq \pm 1 \text{ dB}$ (<100 Hz – 8000 Hz).
3. Standard: IEC 60318-3:1998).