

TM2

INTEGRATED EAR-SIMULATOR (COUPLER) FOR IEM TEST AND MEASUREMENT

OVERVIEW

The TM2 is an Integrated Ear-Simulator (coupler) specifically designed for test and measurement in the professional sound industry.

Ear simulator “couplers” are the measurement devices used by manufacturers of IEMs for capturing key metrics during research and development, final production and quality control of IEMs. Using patent-pending technology, the TM2 incorporates these features into an integrated compact package that is ideally suited for sound and studio engineers who want a simple, yet effective way to test IEM performance.

Monitor engineers are often faced with questions from performers regarding the functionality of their IEMs with no reliably consistent method to test them in their environment. With the TM2 and readily available measurement software such as Rational Acoustic’s SMAART or Studio Six Digital’s Audio Tools, a monitor engineer can easily confirm the functionality of each performer’s IEMs as part of a pre-show checklist.



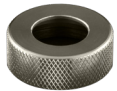
FEATURES

- Durable, compact design
- Calibration file included
- 3-year warranty

APPLICATIONS

- Live Performances
- Broadcast, TV & Radio
- House of Worship

SUPPLIED ACCESSORIES



ADAPTOR
COLLAR



CALIBRATOR
ADAPTOR



* INVARIABLE™
ADAPTOR
(SMALL)



* INVARIABLE™
ADAPTOR
(LARGE)

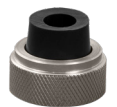


PROTECTIVE
CARRYING CASE

Includes four adaptors (pictured above) and protective carrying case

*** Audix Invariable™ Adaptors are designed to provide fast, convenient, and repeatable IEM measurements. For further detail, see back page.**

OPTIONAL ACCESSORIES



* INVARIABLE™
ADAPTOR
(CUSTOM)



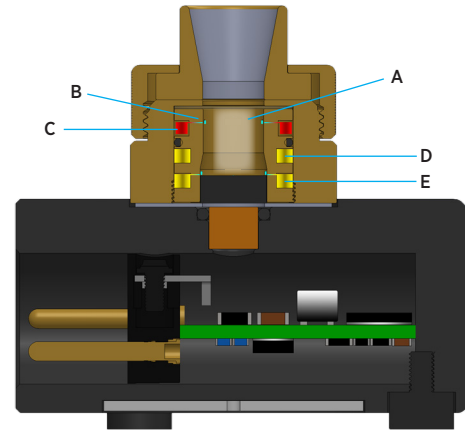
SPECIFICATIONS

Transducer Type	Pre-polarized Condenser
Frequency Response	20 Hz - 20 kHz
Output Impedance	200 ohms
Sensitivity	nom 6.5 mV / Pa @ 1 kHz*
	*Sensitivity for each unit included with calibration data
Maximum SPL	130 dB
Signal to Noise Ratio	68 dB
Equivalent Noise Level	26 dB (A weighted)
Dynamic Range	104 dB
Connector	3-pin XLRm
Power Requirements	24 - 48 V Phantom
Power Consumption	9 mA @ 48 Volts
Polarity	Positive pressure produces positive voltage on pin 2 relative to pin 3 of XLR
Materials / Finish	Precision-machined components with nickel and anodized finish
Weight	190 g
Dimensions	57 mm x 41 mm
Package Weight	564 g
Package Dimensions	243 mm x 147 mm x 97 mm

***The optional custom and 64 Audio adaptors are included in this kit for evaluation and feedback.**

PROFESSIONAL EAR SIMULATOR DESIGN PRINCIPLES

Similar to loudspeaker measurement with microphones, ear simulators measure the acoustical response of earphones and headphones that are placed in or over the ear. Lab and Pro Ear Simulators such as the TM2 incorporate a series of chambers and passages, the IEM tip is inserted into the opening of the main chamber A, which is connected by B, 500 micron passages to chambers C, D, E, which simulate the dampening and impedance of the average human ear canal. At the base of the main chamber is the transducer which acts similar to the human ear drum and converts the acoustic signal of the IEM.



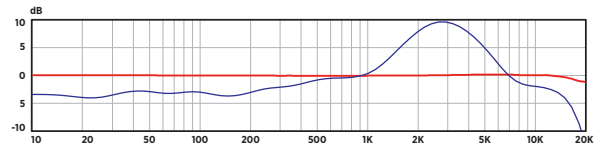
SETUP AND INITIAL IEM MEASUREMENT

1. Select software that includes transfer function measurement such as Rational Acoustic's SMAART, AFMG's Systune, Studio Six Digital's AudioTools and an audio interface.
2. Within the selected software, configure the TM2 as a reference mic.
3. Connect TM2 output into a "mic level" input of the audio interface with phantom power.
4. When testing with bare nozzle, use the appropriate adaptor size. With IEM tips attached, use the ear simulator adaptor.
5. Connect IEMs to sound source.
6. Ensure that sound source is also assigned as a reference within test-and-measurement software.
7. Measure the response of your IEM.

EAR SIMULATOR RESPONSE VS T&M MICROPHONE

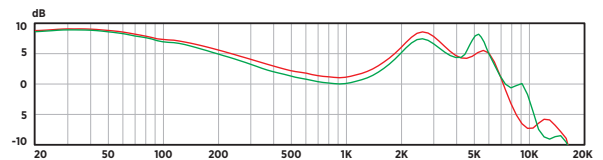
When we measure a loudspeaker with a theoretical flat response, we expect to see the red curve. When we measure the same speaker with an ear simulator, the response will be similar to the blue graph. For this reason, IEM and headphone measurements utilizing an ear simulator are not flat.

EAR SIM VS T&M MICROPHONE



AUDIX INVARIABLE™ ADAPTORS

Audix Invariable™ adaptors are designed to provide fast and repeatable measurements. They will not match the curves provided by the IEM manufacturer. In order to duplicate the manufacturer's test results, utilize their recommended adaptor with the TM2. The graph on the right shows an example of the same IEM measured with an IEC 711 adaptor and an Audix Invariable adaptor.



USER TIPS

- On a regular or as-needed basis, retest IEMs to ensure performance is consistent. If the new measurement shows any major changes:
 - Gently insert the IEM and turn slightly for a good acoustic seal
 - Make sure there is no change in EQ settings.
- Modern digital mixing consoles with USB output for recording can be used for the TM2 in conjunction with Mac / PC based software noted above. All that is needed is an available channel for the TM2 input. Configure software I/O to coincide with TM2 input channel and pink noise output for IEM device under test (DUT).
- Studio Six AudioTools for iOS requires the transfer function module "in-app purchase". Audix has verified operation of the Studio Six iAudioInterface2 with the TM2. Headphone output from the iAudioInterface2 is sufficient to drive IEM levels necessary for testing.

MODEL VARIATIONS

TM2SP - TM2 stereo pair w/ mounting base



For more setup information, including videos, visit www.audixusa.com.