

GRAS 43AA

Ear Simulator Kit According to IEC 60318-1



43AA is a complete test jig for acoustical measurements on telephone handsets and earphones in accordance with:

- IEC 60318-1 (60318) Electroacoustics—Simulators of human head and ear—Part 1: Ear simulator for the calibration of supra-aural and circumaural earphones,
- ITU-T Recommendation P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

43AA also complies with IEC 60318-2 (1999) (withdrawn and now incorporated into 60318-1).

Included:

- RA0039 IEC 60318-1 (60318) Ear Simulator
- 40AG ½" Pressure Microphone
- 26AC ¼" Preamplifier
- Mounting plate for circum-aural headphones
- The RA0052 Test Jig has an adjustable spring-loaded arm to exert a variable force on the test object.

GRAS 43AB

½" 2cc Coupler Kit According to IEC 60318-5



43AB is a complete test jig for acoustical measurements on hearing aids in accordance with IEC 60318-5 (60126) and ANSI S3.7-1995 on insert type hearing aids in accordance with:

- IEC 60318-5 (60126) IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts.
- ANSI S3.7-1995 American National Standard for Coupler Calibration of Earphones.

Included:

- RA0038 IEC 60318-5 (60126) 2cc Coupler
- 40AG ½" Pressure Microphone
- 26AC ¼" Preamplifier
- The RA0052 Test Jig has an adjustable spring-loaded arm to exert a variable force on the test object
- Studs and moulds for BTE and ITE instruments.

43AA Variants

43AA-S2 Ear Simulator Kit According to IEC 60318-1, CCP, IEEE 1451.4 TEDS v. 1.0 compliant—40AO Pre-polarized Pressure Microphone included.

43AA-S3 Ear Simulator Kit According to IEC 60318-1, LEMO, as 43AA, but with 26AB Preamplifier.

Specifications	43AA	43AB
Standards	IEC 60318-1 ITU-T Rec. P.57	IEC 60318-5 ANSI S3.7
Dynamic Range (ext. pol. mic.) (prepol. mic.)	25 dB(A) – 164 dB 25 dB(A) – 153 dB	25 dB(A) – 164 dB
Effective Volume	–	2 cc
Weight	1650 g	1550 g



GRAS 43AC

Ear Simulator Kit According to IEC 60318-4



43AC is a complete test jig for acoustical measurements on earphones coupled to the ear by inserts such as tubes and ear moulds in accordance with:

- IEC 60318-4 (former 60711) Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts.
- ITU-T Recommendations P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

Included:

- RA0045 IEC 60318-4 (former 60711) Ear Simulator
- 40AG ½" Pressure Microphone
- 26AC ¼" Preamplifier
- The RA0052 Test Jig has an adjustable spring-loaded arm to exert a variable force on the test object.

GRAS 43AF

1" 6cc Coupler Kit According to IEC 60318-3



43AF is a complete test jig for acoustically testing telephone handsets and earphones in accordance with ANSI S3.7 – 1995 and IEC 60318-3.

Included:

- RA0075 NBS 9-A 6cc Coupler
- RA0076 Thread Adapter
- 40EN 1" Pressure Microphone (in WE 640AA configuration)
- 26AC ¼" Preamplifier
- The RA0052 Test Jig has an adjustable spring-loaded arm to exert a variable force on the test object.

43AC Variants

43AC-S1 Ear Simulator Kit According to IEC 60318-4, CCP. For more info about the included RA0045-S1, see page 69.

43AC-S4 High-Frequency Ear Simulator Kit LEMO. For more info about the included RA0401, see page 69.

43AC-S5 High-Frequency Ear Simulator Kit CCP. For more info about the included RA0402, see page 69

43AC-S6 Hi-Res Ear Simulator Kit, LEMO. For more info about the included RA0403, see page 69.

43AC-S7 Hi-Res Ear Simulator Kit, CCP. For more info about the included RA0404, see page 69.

Specifications	43AC	43AF
Standards	IEC 60318-4, ITU-T Rec. P.57	IEC 60318-3, ANSI S3.7
Performance data	RA0045, RA0045-S1 } specs on RA0401, RA0402 } page 69 RA0403, RA0404	25 dB(A) – 160 dB
Effective Volume	1260 mm ³	6cc
Weight	1650 g	1550 g



GRAS 43AD

Ear Simulator Kit according to ITU-T Rec. P57 Type 1



43AD is a complete assembly for acoustical measurements on acoustical transmitters and loudspeakers in accordance with:

- IEC 60318-1 (60318) Electroacoustics—Simulators of human head and ear—Part 1: Ear simulator for the calibration of supra-aural earphones. 43AA also complies with IEC 60318-2 (1999) (withdrawn and now incorporated into 60318-1).
- ITU-T Recommendation P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

It can be integrated with a telephone test head or permanently installed on a production test line.

Included:

- RA0039 IEC 60318-1 (60318) Ear Simulator
- 40AG ½" Pressure Microphone
- 26AK ½" Preamplifier
- GR0332 and GR0336 Snap Coupling
- Mounting plate for circum-aural headphones.

GRAS 43AE

Ear Simulator Kit according to ITU-T Rec. P57 Type 3.2



43AE is an IEC 60318-4 (former 60711) Ear Simulator for acoustically testing supra-aural earphones, telephone handsets and loudspeakers in accordance with:

- IEC 60318-4 (former 60711) Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts (½" Pressure Microphone 40AG included)
- ITU-T Recommendations P.57 (08/96) Series P: Telephone transmission quality, Objective measuring apparatus: Artificial ears.

Included:

- RA0045 IEC 60318-4 (former 60711) Ear Simulator (40AG ½" Microphone built-in)
- 26AC ¼" Preamplifier
- RA0056 Low-leak simplified Pinna Simulator
- RA0057 High-leak simplified Pinna Simulator.

43AD Variant

43AD-S1 CCP Ear Simulator Kit According to ITU-T Rec. P57 Type 1—IEEE 1451.4 TEDS v. 1.0 compliant.

43AE Variants

43AE-S1 CCP Ear Simulator Kit According to ITU-T Rec. P57 Type 3.2.

43AE-S2 LEMO Ear Simulator Kit According to ITU-T Rec. P57 Type 3.2. As 43AE, but with 26AB Preamplifier.

Specifications	43AD	43AE
Standards	IEC 60318-1 ITU-T Rec. P.57	IEC 60318-4 ITU-T Rec. P.57
Dynamic Range	25 dB(A) – 164 dB	25 dB(A) – 164 dB
Effective Volume	–	1260 mm ³
Weight	1650 g	1550 g



GRAS 43AG

Ear & Cheek Simulator Kit IEC 60318-4 & 7



43AG is a table top test device for measurements on earphones of various types. It simulates the ear and cheek of a human head as well as approximates the acoustic impedance of an average human ear. It can be used to verify frequency response, distortion, isolation and leakage. Its versatility means that it can be used for testing of both concha and insert types earphones. It can also be used for headphone and headset testing, both circum-aural and supra-aural types. Also, all common types of hearing-aids and telephone handset can be tested with 43AG.

The following configurations are available:

43AG Configurations

- 43AG-1** Ear and Cheek Simulator LEMO is configured with an RA0045 Externally Polarized Ear Simulator According to IEC 60318-4 and a large KEMAR Right Pinna 55 Shore 00.
- 43AG-2** Ear and Cheek Simulator CCP is configured with a RA0045-S1 Prepolarized Ear Simulator According to IEC 60318-4 and a large KEMAR Right Pinna 55 Shore 00.
- 43AG-3** Ear and Cheek Simulator w Anthropometric Pinna LEMO is configured with an RA0045 Externally Polarized Ear Simulator According to IEC 60318-4 and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-4** Ear and Cheek Simulator w Anthropometric Pinna CCP is configured with a RA0045-S1 Prepolarized Ear Simulator According to IEC 60318-4 and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-5** Ear and Cheek Simulator, Low-noise is configured with a 43BB low-noise ear simulator system and a large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-6** Ear and Cheek Simulator, High-Frequency, LEMO is configured with an RA0401 Externally Polarized High-Frequency Ear Simulator and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-7** Ear and Cheek Simulator, High-Frequency CCP is configured with an RA0402 Prepolarized High-Frequency Ear Simulator and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-8** Ear and Cheek Simulator, Hi-Res, LEMO is configured with an RA0403 Externally Polarized Hi-Res Ear Simulator and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.
- 43AG-9** Ear and Cheek Simulator, Hi-Res, CCP is configured with an RA0404 Prepolarized Hi-Res Ear Simulator and a KB5000 Large KEMAR Right Anthropometric Pinna 35 Shore 00.

Specifications

For specifications for the Ear Simulators, see page 69.

For specifications for 43BB, page 66

For more information about the Pinnae, see page 102.



GRAS 43BA

¼" 0.4cc High-frequency Coupler Kit



43BA is a high frequency ¼" 0.4cc coupler for test of hearing aids at frequencies up to 16 kHz and fulfils IEC60318-8. It is a complete kit with a ¼" pressure microphone, a ¼" preamplifier and the same adapters known from the reference 2cc coupler. It is designed for repetitive use and is equally suited for research, quality assurance and production test applications.

The 43BA coupler kit is designed to facilitate the measurement needs described in the IEC TS 62886:2016 "Method for measuring electroacoustic performance up to 16 kHz" and meets the need for an accurate and repeatable measurement method that can be used by designers of hearing aids and hearing aids receivers, and by fitters of hearing aids.

Three versions of the 0.4cc coupler kit are available:



43BA Coupler Kits

- 43BA-1** ¼" 0.4cc High Frequency Coupler Kit Includes 40BP ¼" Ext. Polarized Pressure Microphone, 26AS ¼" Standard Preamplifier with 3 m Integrated Cable, Very Short and RA0252 ¼" 0.4cc High frequency Coupler as well as cable and adapters.
- 43BA-2** ¼" 0.4cc CCP High Frequency Coupler Kit Includes 40BD ¼" prepolarized Pressure Microphone, 26CS ¼" CCP Standard Preamplifier with Microdot Connector, Very Short and RA0252 ¼" 0.4cc High frequency Coupler as well as cable and adapters.
- 43BA-3** ¼" 0.4cc CCP High Frequency Coupler Kit, High Sensitivity Includes a special ¼" prepolarized high-sensitivity microphone, 26CS ¼" CCP Standard Preamplifier with Microdot Connector, Very Short and RA0252 ¼" 0.4cc High frequency Coupler as well as cable and adapters.

GRAS 43BB



Low-noise Ear Simulator System



43BB is a low-noise, high-sensitive ear simulator system for measurements of sound pressure levels close to or below the threshold of human hearing.

It has a very low noise floor—below 10.5 dB(A)—and can measure sound levels below or close to the threshold of human hearing. For comparison, a standard IEC 60318-4 (711) ear simulator with a 40AG ½" microphone has its noise floor at 24.2 dB(A).

It consists of the well known standardized IEC 60318-4 ear simulator and the 40HT Low-noise Microphone System.

43BB-1 is a variant designed for mounting in KEMAR. It is also part of the KEMAR configurations for low-noise testing, 45BB-11 and -12 and 45BC-11 and -12, see page 72.

Specifications	43BB
Connector	7-pin LEMO with 3-m cable
Dynamic range	10.5 dB(A) – 113 dB
Coupler volume	1260 mm ³

