



# Headphone Measurements

Test Solutions for R&D, PL and QA/QC



**GRAS** Sound  
& Vibration

# A World of Solutions

To help headphone manufacturers excel, GRAS offers a wide range of complete test solutions that ensure accurate and repeatable data – every time!

## Headphone Testing for R&D

Headphones are made for people and should therefore, be tested on test equipment that is as realistic as possible by replicating the human head and torso. The GRAS KEMAR is the only head and torso simulator based on measurements of real humans.

Depending on the specific configuration, our wide range of acoustic test fixtures and accessories will help you solve challenges such as fit and placement of in-ear, on-ear and over-ear products, ensuring repeatability of low frequency response, stable output of high frequencies or the ability to measure below the threshold of human hearing.

## Headphone Testing for Production Line (PL)

We offer preconfigured test fixtures and solutions tailored to meet your specific needs. Furthermore, we can help you develop an optimal production line testing of your headphones and headsets.

## Integrated Testing

When choosing test solutions, obtaining data that allow direct comparison of measurements from R&D, PL and QA/QC can be an important parameter. GRAS offers several solutions that can make integration across your organization possible.

## IEC Standardized Testing – and Beyond

Whether your need is IEC-standardized testing, improved standardized testing with anthropometric pinnae or testing up to 20 kHz or even 50 kHz, we have preconfigured ready-to-use solutions. If you need an even more highly specialized test setup tailored to your specific needs, we can help you with a customized solution – contact your local GRAS partner for further information.



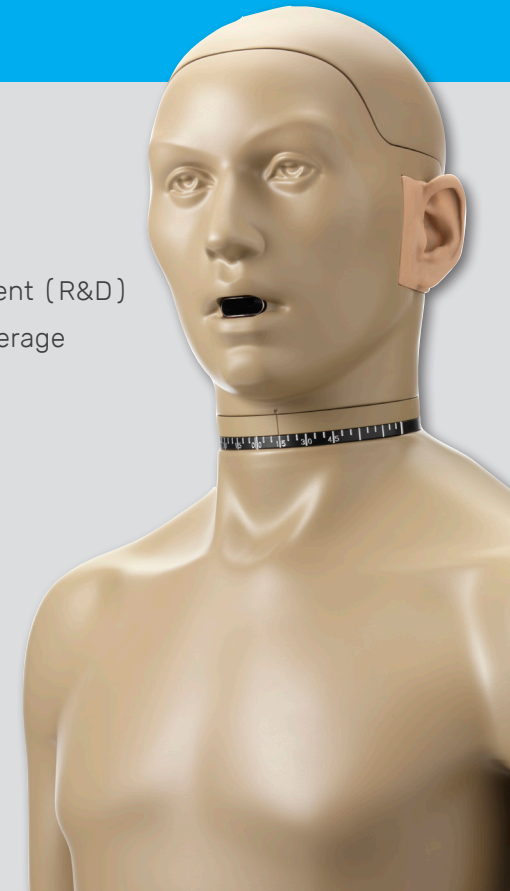
## 45CC Headphone Test Fixture

- > Ideal for production line testing
- > Test of supra- and circumaural headphones
- > Stable and highly repeatable results
- > Decreases margin of error in production
- > Available in multiple configurations
- > 2-way testing with artificial mouth

## 45BB/BC KEMAR

- > Ideal for research and development (R&D)
- > HRTF that correlates with the average human adult
- > Can measure up to 50 kHz\*
- > Configurable to suit your application
- > 2-way testing with artificial mouth (45BC)

\* Depending on configuration



## 43AG Ear & Cheek Simulator

- > High-value R&D and QA/QC fixture
- > Quick and easy mounting
- > Portable tabletop solution
- > Many configurations available
- > Single-channel test fixture



## 45CA Headphone Test Fixture

- > Safe choice for R&D and PL
- > Repeatable and fast measurements
- > Very high self-insertion loss
- > Perfect for ANC testing
- > Many configurations available



## The Broadest Range of Ear Simulators

GRAS offers the industry's broadest range of ear simulators and couplers: A full range of IEC 60318-1 to 5 ear simulators, complemented by a number of improved versions of the standardized IEC 60318-4 ear simulator.

This range of ear simulators comprises:

- > The standardized IEC 60318-4 ear simulator
- > A low-noise version for measurements down to 10.5 dB
- > A high-frequency version for measurements up to 20 kHz
- > A Hi-Res version for measurements up to 50 kHz



## The Broadest Range of Pinnae

Large or small, soft or hard, straight or tapered, left and right - GRAS has a full range of pinnae simulators for all types of standardized testing with IEC 60318-4 ear simulators.

In addition to this, our anthropometric pinnae provide enhanced flexibility, fit, insertion accuracy and seal, factors that improve accuracy and repeatability.



GRAS

# GRAS Worldwide

Subsidiaries and distributors in more  
than 40 countries

## GRAS SOUND & VIBRATION HEAD OFFICE, DENMARK

Skovlytoften 33  
2840 Holte  
Denmark  
Tel: +45 4566 4046  
[www.gras.dk](http://www.gras.dk)  
[gras@gras.dk](mailto:gras@gras.dk)

## GRAS SOUND & VIBRATION USA

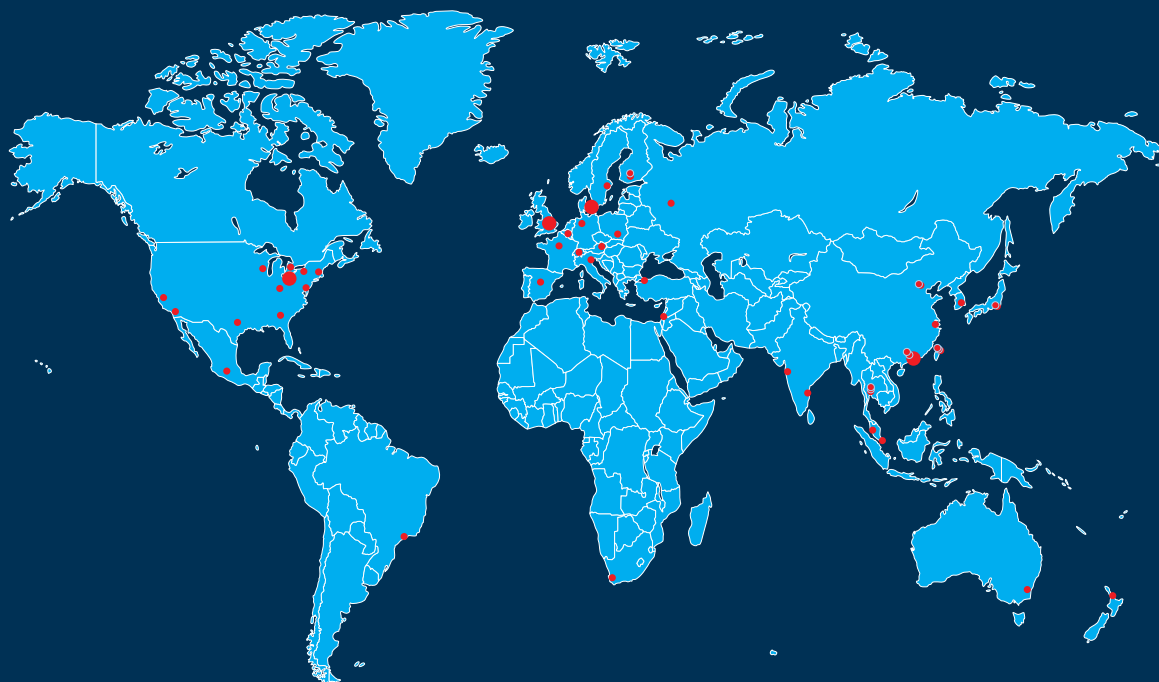
2234 East Enterprise Parkway  
Twinsburg, OH 44087  
United States  
Tel: +1 330 425 1201  
[www.gras.us](http://www.gras.us)  
[sales@gras.us](mailto:sales@gras.us)

## GRAS SOUND & VIBRATION UK

Building 115  
Bedford Technology Park Thurleigh  
MK44 2YA Bedford  
United Kingdom  
Tel: +44 1234 639552  
[www.gras.co.uk](http://www.gras.co.uk)  
[sales@gras.co.uk](mailto:sales@gras.co.uk)

## GRAS SOUND & VIBRATION CHINA

Rm 1606, Kodak House II  
No. 39 Healthy Street East North Point, Hong Kong  
China  
Tel: +852 2833 9987  
[www.gras.com.cn](http://www.gras.com.cn)  
[sales@graschina.com](mailto:sales@graschina.com)



## ABOUT GRAS SOUND & VIBRATION

GRAS is a worldwide leader in the sound and vibration industry. We develop and manufacture state-of-the-art measurement microphones to industries where acoustic measuring accuracy and repeatability is of utmost importance in R&D, QA and production. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, and consumer electronics. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect and trust.

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