



Hearing Protection Testing & Development

Axiometrix Solutions

APPLICATION NOTE // By Lars Winberg



Advanced Hearing Protection Testing Solutions for Defense Applications

At GRAS Sound & Vibration, we provide industry-leading acoustic measurement equipment tailored to the rigorous demands of defense applications. Our solutions enable the precise evaluation and development of hearing protection devices, including earplugs, earmuffs, and advanced active hearing protection systems, ensuring maximum safety and performance for military personnel in high-noise environments.

Equipment for Cutting-Edge Testing in Defense

GRAS offers a comprehensive range of acoustic measurement tools that meet the stringent requirements of defense organizations worldwide. Our products are designed to support the development and testing of hearing protection devices for military use, ensuring soldier safety and operational effectiveness:

- **Acoustic Test Fixtures (ATFs):** High-accuracy fixtures for standardized testing of passive and active hearing protection devices.
- **Head-and-Torso Simulators (KEMAR):** Realistic and repeatable testing solutions that simulate human anatomy, enabling precise evaluation of hearing protection in real-world conditions.
- **Impulse Noise Testing:** Specialized equipment for assessing protection against high-intensity impulse sounds, such as gunfire and explosions, critical for military environments.
- **Steady-State Noise Testing:** Tools for evaluating protection against continuous noise, such as vehicle engines, aircraft, and machinery.

Supporting Military-Grade Hearing Protection Development

GRAS products are trusted by defense organizations and manufacturers worldwide to develop and test hearing protection devices that meet the unique challenges of military operations:

- **Situational Awareness:** Ensure soldiers remain aware of their surroundings while being protected from harmful noise levels.
- **Extreme Noise Environments:** Evaluate protection against the most demanding acoustic environments, including combat zones and training exercises.
- **Compliance with Standards:** Our equipment supports testing in accordance with military and international standards, ensuring your products meet stringent regulatory requirements.



GRAS 45CB



GRAS 45CA



GRAS 46AE

GRAS 46BE



APx517

Why Choose GRAS for Defense Applications?

- **Trusted by Defense Leaders:** GRAS equipment is used by leading defense organizations and manufacturers globally.
- **Unmatched Precision:** Our solutions deliver accurate and repeatable results, ensuring confidence in your testing and development processes.
- **Tailored for Defense Needs:** We understand the unique challenges of military environments and provide solutions designed to meet them.
- **Comprehensive Product Range:** From microphones to test fixtures, we offer all the tools needed for hearing protection testing in defense.

Recommended Solution Configuration

Based on the application requirements and environmental conditions, Axiometrix recommends a tailored measurement solution combining high-precision microphones, signal conditioning, and analysis systems to ensure reliable, repeatable, and standards-compliant results in demanding defense environments.

Typical recommended solutions may include:

- **GRAS 45CB** Acoustic Test Fixture

or

- **GRAS 45CA** Headphone/Hearing-protector Test Fixture
+ **GRAS 46AE/GRAS 46BE** 1/2" or 1/4" CCP Free-field Standard Microphone Set
- **APx517**

For more information or application-specific recommendations, please contact our team of specialists.

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About Axiometrix Solutions

Axiometrix Solutions is a global leader in advanced test and measurement solutions, supporting customers across aerospace, automotive, defense, audio, and electronics industries. With a strong focus on precision, reliability, and innovation, Axiometrix delivers technologies that enable accurate measurement and analysis in even the most demanding environments.

Axiometrix Solutions brings together three world-class brands:

- **GRAS Acoustics** – Specialists in high-precision measurement microphones and acoustic solutions, trusted for their accuracy, durability, and repeatability.
- **imc Test & Measurement** – Experts in intelligent data acquisition systems and real-time analysis for mechanical and mechatronic testing.
- **Audio Precision** – The industry standard in audio analyzers and electroacoustic test solutions.

Together, these brands provide a comprehensive portfolio of solutions that empower engineers and researchers worldwide to measure, analyze, and improve performance across a wide range of applications. Axiometrix Solutions operates globally through subsidiaries and distributors in more than 40 countries. Learn more at www.axiometrixsolutions.com