DEFENSE
CONSUMER ELECTRONICS

Testing Tactical Communication Systems in Armored Vehicle Environments

✓ **CUSTOMER**
INVISIO / Racal Acoustics

✓ **PRODUCT**
GRAS 45CB
Acoustic Test Fixture
GRAS 45CB >

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THE CHALLENGE:
Communication in Acoustically Chaotic Environments

Modern armored vehicles represent one of the most demanding acoustic environments in defense. Inside the vehicle, crews are exposed to a complex mix of high sound pressure levels, reflections, structure-borne noise, and spatial distortion.

These conditions create a critical challenge:

- Ensuring clear and reliable communication
- Maintaining situational awareness
- Providing effective hearing protection —all at the same time.

Traditional testing methods often fail to replicate these real-world conditions accurately, making it difficult to validate how communication systems truly perform in operational environments.



GRAS
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GRAS 45CB
Acoustic Test Fixture

GRAS 45CB >

THE SOLUTION:
Realistic Acoustic Simulation with GRAS 45CB

To address this challenge, INVISIO utilizes a reverberation chamber at their Croxley Park facility to simulate the harsh, echo-filled environment of armored vehicles.

At the center of this setup is the GRAS 45CB Acoustic Test Fixture (ATF), a standardized platform designed for objective and repeatable testing of hearing protection and communication devices. The 45CB enables engineers to evaluate system performance under realistic acoustic conditions while ensuring consistent and reproducible measurements.

This allows engineers to:

- Accurately measure speech intelligibility in extreme noise
- Evaluate hearing protection performance under impulse and continuous noise
- Test communication systems in the presence of layered noise and reflections
- Validate performance under realistic acoustic conditions using a standardized and repeatable test platform.



THE RESULT:
Reliable Performance in Mission-Critical Systems

By combining advanced acoustic simulation with the GRAS 45CB, INVISIO can design and validate communication systems that perform reliably in the field.

This ensures:

- Improved communication clarity in combat environments
- Enhanced crew safety and hearing protection
- Greater confidence in system performance before deployment

The result is not just better equipment—but mission-ready solutions that support operational survivability for today's mounted soldiers.



INVISIO®

RACAL ACOUSTICS

ABOUT THE CUSTOMER:
INVISIO / Racal Acoustics

INVISIO is a leading provider of advanced communication and hearing protection systems for military and public safety professionals. Their solutions are designed for use in high-noise, mission-critical environments, where reliable communication and situational awareness are essential.

Through its Racal Acoustics brand, INVISIO develops and delivers tactical headsets and integrated communication systems used by defense forces worldwide. Their technologies are engineered to ensure that users can communicate clearly while being protected from harmful noise levels—supporting both operational effectiveness and long-term hearing safety.

An Axiometrix Solutions Brand

About GRAS Acoustics

GRAS Acoustics is a global leader in high-precision acoustic measurement solutions, trusted by defense organizations, aerospace leaders, and research institutions worldwide.

With more than 30 years of experience, GRAS designs and manufactures measurement microphones, acoustic test fixtures, ear simulators, couplers, and advanced acoustic test systems known for their accuracy, durability, and repeatability.

GRAS solutions are used to support critical applications such as:

- Hearing protection and communication system testing
- High-intensity noise and impulse measurements
- Defense and aerospace qualification testing

All GRAS products are developed and manufactured under strict quality standards, ensuring reliable, traceable, and repeatable data—even in the most demanding environments.

Why GRAS

GRAS Acoustic Test Fixtures and hearing-protection test solutions are trusted across the defense industry for their:

Keep the bullets, but slightly adapt them:

- High accuracy and repeatability
- Reliable and standardized test conditions
- Robustness in demanding test environments
- Compliance with international standards



Conclusion

In defense applications, there is no room for uncertainty. By using the **GRAS 45CB Acoustic Test Fixture** in advanced acoustic test environments, companies like INVISIO ensure that their communication systems are not only functional—but fully optimized for real-world combat conditions.

For more information, please contact marketing@grasacoustics.com.

About GRAS Acoustics

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 the 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.
GRAS Acoustics is represented through subsidiaries and distributors in more than 40 countries and is part of Axiometrix Solutions, a leading test solutions provider comprised of globally recognized measurement brands.

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