

# The Complete Mic Test Solution

**TELEFUNKEN Leverages Audio Precision Technology for its New Microphone Testing Lab**

## ✓ CUSTOMER

TELEFUNKEN



**Elektroakustik**

## ✓ PRODUCT

APx517B

## ✓ PERSONS

**Ryan Loftus**

Design Engineer, TELEFUNKEN



*An Axiometrix Solutions Brand*



## OPPORTUNITY:

Industry-leading microphone manufacturer TELEFUNKEN Elektroakustik is all about perfection when it comes to recreating classic microphones. They masterfully blend vintage style and sound with the reliability of a modern-day microphone design. With its commitment to both the sonic excellence and quality of all its products, TELEFUNKEN is rivaled only by its dedication to providing the best possible service to its customers.

Driven by their commitment to excellence, TELEFUNKEN recently constructed a cutting-edge testing and design suite called the Final Listening and Test Space (FLATS) at their South Windsor, Connecticut facility. FLATS is a state-of-the-art microphone testing environment specifically tailored to meet the company's stringent precision testing and quality control requirements. Based around a large three-room suite, FLATS is designed to provide 45 dB of noise reduction between rooms and the outside space. The walls have perforated absorbers and acoustic foam on both sides of a solid steel septum barrier. Each room has a specific function: one for critical component testing, a second for quiet listening/isolation, and a third final product testing room.

This new facility demanded precision reference microphones along with test and measurement hardware and software designed to ensure all test procedures are completed within certified industry lab standards, complying with, and further advancing current microphone testing methods.



## CHALLENGE:

The previous software utilized by the TELEFUNKEN team had its share of limitations, particularly in establishing precise Pass-Fail criteria for tests with consistent parameters. These limitations resulted in the need for more frequent calibrations, which were time-consuming and resource intensive. The team recognized that maintaining consistency, repeatability, and accuracy was of utmost importance.

To address these challenges, the team sought a comprehensive solution that would ensure their tests consistently produced reliable results. They emphasized the need for reproducibility and precision, enabling them to replicate their findings accurately. It was also vital for the team to execute tests in a controlled environment, employing identical setups and test profiles from the research and development stage through to the production stage.

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*Because we were already familiar with AP and comfortable with the analyzers, it made the experience with the APx500 software fantastic.*

*The team thoroughly enjoyed working with it, as it's familiar territory for us. When we test and measure a device's frequency response and distortion, we can now view everything in the software interface. It's very powerful when you can see everything in a single software system, you can then tweak it however you want.*

**Ryan Loftus**

Design Engineer, TELEFUNKEN

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#### Fast Results

The AP Analyzers are quick to set up and quick to deliver results.

#### Comprehensive Portfolio

GRAS microphones complement AP Analyzers for a complete product solution.



## CHALLENGE CONTINUED:

One of the other requirements for the test and measurement solution was the ability to provide a visual representation that could be shared with customers. TELEFUNKEN wanted to assure their customers of the consistent accuracy of their measurements, while also delivering the essential test results for their microphones, such as frequency response and distortion testing. Ideally, they aimed to achieve all of this through a single, unified software system.

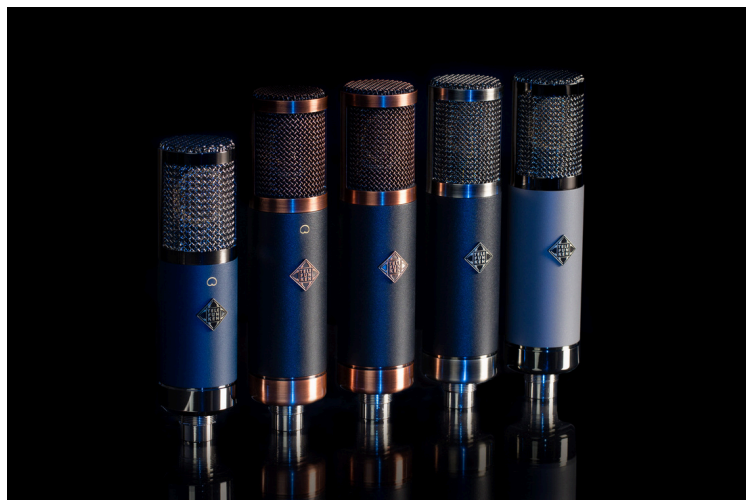


## THE SOLUTION

To ensure continuity across all environments, TELEFUNKEN relied on the combined expertise of Audio Precision (AP) and its sister company GRAS Acoustics. Both companies operate under the Axiometrix Solutions Brand umbrella. It was an easy decision for TELEFUNKEN, drawing on its experience with AP's reliability and support—the team went within the Axiometrix Solutions' product portfolio: APx517B Series Acoustic Analyzers, APx500 software, APx515B Series Analyzers, and GRAS 40PP microphones to equip the new facility.

The analyzers were simple to hook up, intuitive, and enabled the team to swiftly see results—the physical setup was straightforward. AP facilitated comprehensive training on the new software platform, ensuring a rapid learning curve for the team. They leveraged AP's extensive global tech support team to guide them on adjusting specific test conditions, which further enhanced their understanding. With these resources, the team was well-equipped for success.

The team rounded out the special chambers with precision GRAS Acoustics 40PP reference microphones to analyze frequency response against production microphones.



TELEFUNKEN Alchemy Series

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*Consistent, accurate, and repeatable test measurements are the main objective, along with being able to have everything you need in a single environment—that’s what we needed and that’s what we got with AP. Their solutions offered us the reliability, quality, workflow integration, and support we were looking for. It was just the right fit all around,” added Loftus.*

**Ryan Loftus**

Design Engineer, TELEFUNKEN

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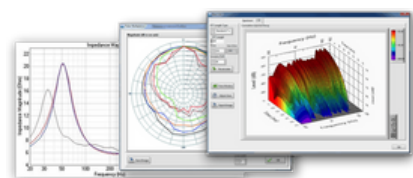
*My perspective is just to go for the industry standard that has a great legacy and great support. AP is the industry standard.*

**Ryan Loftus**

Design Engineer, TELEFUNKEN



APx517B



AP Electro-Acoustic Test Software



## THE RESULTS

By adopting the AP solution, TELEFUNKEN has been able to overcome the limitations of its previous system and achieve the desired levels of consistency, repeatability, and accuracy in its testing processes.

And because TELEFUNKEN simultaneously built new test chambers and listening environments, the team appreciated input from AP—with suggestions and ideas on how to tailor the software to better meet their specific needs. The ongoing feedback loop between TELEFUNKEN and AP allowed for continuous improvements and adjustments to the software, ensuring it aligned perfectly with their requirements. The team also knows that they can rely on AP if they encounter challenges, want to experiment with a new test procedure or need guidance on setting up for a specific parameter.

Today the TELEFUNKEN team can visually show off frequency response and future polar pattern response, set benchmarks for the pass-fail, and have it be consistent every time the test procedure is opened. The AP solution has also helped the team level up and standardize the convention of their testing with regular results every time.



TELEFUNKEN Dynamic Series microphones

## BACKGROUND: APx517B

The APx517B Series acoustic audio analyzer is specifically designed, configured and priced to meet production-line needs. It is ideal for the testing of speakers, microphones, headphones, headsets and the wide range of consumer electronics incorporating speakers and microphones. With the APx517B, manufacturers can deploy an integrated acoustic test system that brings the renowned quality, reliability and robustness of AP’s lab-oriented analyzers to their manufacturing lines.

## ABOUT AUDIO PRECISION

Since our founding in 1984, Audio Precision® (AP) has evolved into the worldwide leader for audio analyzers and audio testing. We maintain a singular focus: to help engineers worldwide design, validate, characterize, and manufacture audio components, products and systems. Fast forward forty years and AP is the recognized global standard in audio tests. We provide elite audio analysis, audio measurement software, and a wide range of modules, options and accessories to support analog and digital audio measurement, as well as electro-acoustic testing, and much more.

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