



Lessons from the Production Line:
Trust and test compliance is the
cornerstone of the relationship
with contract manufacturers.

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***Trust!** We could do with a little more trust and a little less control. As contract manufacturers, we want to deliver the best audio products possible, especially when working for premium brands. We accept that strict test regimes are a necessity to ensure audio quality. But increasing the number of control measures only adds costs and pressure on to our operations. We have to find new ways to ensure audio quality, to deliver products consumers will love – that is the only way to build trust between contract manufacturers and audio brands.*

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Introduction

When outsourcing production of audio products to contract manufacturers, you are entrusting your product quality to outsiders – and you have precious little to base that trust on. When it comes to audio quality, diligent audio testing of your products along the production line is key to maintaining the desired quality level. Too many false passes will result in poor quality products reaching the market – with negative consumer reactions and expensive product recalls soon to follow. On the other hand, failing too many products due to faulty measurements will make your production more expensive.

And while you probably already have strict test protocols in place, you actually have little to no control over whether your contract manufacturers comply with them. So, do you simply keep adding new control mechanisms to the ones you already have? When you and your company decided to outsource production, you did so looking for advantages like cost-effectiveness, scalability, and shorter production times. By imposing more and more control protocols, you are chipping away at these gains. And, in our opinion, by adding additional costs in the form of extra controls, you risk pressuring your contract manufacturer into cutting corners, creating a vicious circle of growing mistrust. What if there was a better way to protect your product quality, your margins, your brand – and yourself?

In this whitepaper, we'll examine the ways your trust could go unrewarded when it comes to audio testing – and how ignorance, cost-cutting, lack of training, rough handling of test equipment, etc. can have disastrous consequences for your production run.

PRODUCTION LINE AUDIO TESTING PITFALLS:

Many audio product companies send their own acoustics engineers to ensure that the audio testing set up is correct when setting up new production lines. Or maybe your company stipulates a certain setup, for which you receive documentation before the production line starts up.

But what happens once the acoustics engineers have gone home? What happens when the production line starts up and the workstations and test equipment are manned by the contract manufacturer's own employees? In our experience, what happens is that, at worst, your test regime goes out the window. Because contract manufacturers also have to focus on keeping costs low and profits high. And if getting finished products off the line faster requires some corner cutting, or conveniently overlooking time consuming parts of the test protocol – so be it.

Over the years, we've seen this lead to dubious production and test practices such as:

- Workers not failing faulty products, but instead swapping test microphones between workstations until they get a pass.
- Faulty or missing readjustment or updates of adjustment information.
- Workers keeping a 'sure pass' product handy for testing again and again, while sending untested products down the line as if they had passed.
- Rough handling of microphones which impacts the microphones' ability to deliver correct measurements.
- Missing or inadequate verification and adjustment upon changes in temperature and humidity, throwing all measurements off.
- Contract manufacturers storing idle microphones in bad environmental conditions or near solvents/cleaning supplies, leading to damaged or destroyed microphones.

In short, when dealing with contract manufacturers, your audio products may or may not live up to the audio quality expected by your company or by the consumer. You simply have no way of knowing.



POSSIBLE CONSEQUENCES

What happens when faulty products make it to the market?

POSSIBLE CONSEQUENCES:

Rising costs due to:

- product recalls – these are not only expensive and embarrassing but can erode consumer trust in your products and hurt your company's financial performance.
- handling consumer dissatisfaction and dealing with negative reviews on social media. Sending your customers into the arms of your company's customer service opens another potential pitfall, as 45% of customers share bad experiences with customer service via social media*.
- warranty claims - These can be expensive to handle, both in terms of the cost of repairing or replacing the product and the administrative costs of processing the claims.
- litigation and legal claims
- cost of fixing the issue,
- time spent on identifying, replacing, and recalibrating faulty microphones means longer production times, longer time to market and possible delays to launch plans
- Knock-on effects of poor-quality products reaching the market:
 - o damage to brand value
 - o damage to consumer perception and preference



THE SOLUTION: GRAS EQset™ TEST MICROPHONES

Many of the potential problems we have outlined stem from poor handling and use of test microphones. Test microphones are one of many variables that can derail quality assurance and lead to poor quality in the finished products. But what if you could replace this variable with a constant? With test microphones that use EQset technology, we introduce a microphone that's been designed specifically to mitigate problems on the production line.

Compared to other test microphones, they require no individual adjustment, and their design makes them very hard to make faulty measurements with. Because EQset microphones measure with the exact same sensitivity, they can be freely interchanged without readjustment. If one breaks, it can be replaced at once, without readjustment. This removes a long list of possible pitfalls on the production line – letting production managers breathe a sigh of relief.

Environmental stability

The COVID pandemic taught consumer electronics brands an expensive lesson: Setting up all your production lines in one country is bad for business if that country shuts down. As a result, companies have sought to spread their production lines across different countries and regions. However, this poses a new question for audio products: How to mitigate the impact of environmental differences like temperature, humidity, and static pressure on traditional test microphone measurements when your production lines are spread across multiple locations.

Yet another benefit of microphones with EQset technology is their higher environmental stability as compared to other production line microphones. EQset microphones produce the same precision measurements regardless of the climate your production lines operate in, using the same test equipment across the board without the need for frequent readjustment.

Increase Quality and Precision Further by adding Audio Precision analyzers to requirements

By encouraging your contract manufacturers to use GRAS EQset microphones together with analyzers from Audio Precision (AP), you can further ensure that your test regimes are upheld.

Consistency Across the Board

By insisting on GRAS and AP, you're ensuring that your partners use industry-standard systems that are recognized and trusted globally. This not only simplifies the workflow but also ensures that everyone, including R&D and quality assurance, is working with consistent, precise data, reducing the risk of errors that can arise from using different systems.





Trust Through Proven Systems

By encouraging contract manufacturers to use a production line test setup combining GRAS EQset microphones and AP analyzers, you eliminate the risks and uncertainties associated with homebrewed systems. You can trust that your contract manufacturers are using a solution designed to deliver consistent, accurate results, safeguarding your test regime and brand value.

CONCLUSION

Our studies of production line setups have revealed that the big challenges are establishing trust and compliance with test regimes – but instead of investing in control mechanisms that add costs and delays, new advances in technology, like EQset microphones, can resolve many of the challenges.

The choice is simple: To ensure the desired audio performance of their products, audio brands can either demand that contract manufacturers test rigorously with standard, regularly calibrated microphones – and run the risk of non-compliance on the latter part. Or they can demand that they test rigorously with EQset microphones. EQset technology offers precision at a lower cost by making production line testing more reliable without requiring extra efforts by contract manufacturers.

* http://cdn.zendesk.com/resources/whitepapers/Zendesk_WP_Customer_Service_and_Business_Results.pdf

ABOUT GRAS SOUND & VIBRATION

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

GRAS 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. Read more at www.grasacoustics.com
