



**Flawless Firmware,
Superior Sound: How Indium
Transformed Product Reliability
for a Leading Consumer
Electronics Company**

SUCCESS STORY

A Global Leader in Consumer Electronics With a \$5.28 Billion Market Presence

Indium partnered with a leading consumer electronics company in the USA, renowned for its high-quality audio products such as Bluetooth speakers and wireless headphones. They were facing critical quality assurance challenges that were impacting their product reliability and customer satisfaction.

The Primary Challenges Faced by The Client

- ▶ **Performance and Reliability Issues:** Users reported occasional device reboots, deadlocks, and heating issues during use, which disrupted the listening experience.
- ▶ **Compatibility and Interoperability:** Ensuring Bluetooth devices were compatible with various versions and profiles was critical to maintaining a seamless user experience.
- ▶ **Security Concerns:** A priority was to identify and mitigate potential vulnerabilities to protect user data and prevent unauthorized access.
- ▶ **Power Consumption:** Optimizing battery life while maintaining performance was essential for user satisfaction.
- ▶ **Interference:** Ensuring the devices could perform well even in environments with high levels of electromagnetic interference.

How did Indium Turn Challenges into Triumphs?

To address the client's needs, Indium established a comprehensive, scalable testing lab, outfitted with soundproofing and robust security controls. The lab was designed to replicate end-user environments, providing a controlled space for rigorous quality engineering across both current and future devices. Leveraging a team of experts, the Indium team executed a series of specialized tests:

Firmware Testing:

Verified that Bluetooth firmware functions correctly, covering operations such as pairing, connecting, data transfer, and disconnecting.

Compatibility Testing:

Ensured devices worked seamlessly across different Bluetooth versions and profiles.

Performance Testing:

Assessed gain (dB) output under various physical and network conditions to guarantee consistent audio quality.

Security Testing:

Identified potential vulnerabilities and implemented measures to prevent unauthorized access and data interception.

Power Consumption Testing:

Evaluated and optimized battery usage to extend device life.

Robustness Testing:

Stress-tested the devices to identify and fix potential bugs and crashes.

Interference Testing:

Ensured the devices maintained reliable connections in environments with high electromagnetic interference.

Over-The-Air (OTA)

Firmware Updates Testing:

Verified the reliability and integrity of firmware updates delivered over Bluetooth connections.

Approach & Implementation

As part of the onboarding process, Indium conducted a tailored boot camp to familiarize the team with the client's complex environment, minimizing the learning curve for highly specialized testing. This approach enabled swift adaptation and minimized delays in product release cycles. Additionally, Indium used tools such as the Bluespeak Dongle and Spitfire Polycom sniffer, which allowed for precision in testing and troubleshooting.

Significant Outcomes: Improved User Experience, Faster Time to Market, & More

We swiftly adapted to the client's complex landscape and tools, ensuring no delays in the overall product release. By employing advanced testing methodologies and tools such as the Spitfire Polycom sniffer, Indium got the client several significant business outcomes:

- ▶ **Faster Time to Market:** Rigorous testing and quick resolution of issues enabled the client to launch products more swiftly, staying ahead of the competition.
- ▶ **Zero Packet Loss:** Ensured zero packet loss and network dropouts, significantly enhancing the performance and reliability of Bluetooth connections.
- ▶ **Precision Performance Testing:** Fine-tuned performance/gain (dB) testing with a precision of 98%, ensuring superior product quality.
- ▶ **Predictable Release Cycles:** Established a predictable and firm release date for products, fostering confidence among stakeholders and customers.
- ▶ **Enhanced User Experience:** The improvements in performance, reliability, and noise cancellation led to higher customer satisfaction and loyalty.
- ▶ **Seamless Integration:** Ensured seamless integration with upstream and downstream systems, streamlining the overall product development process.



About Indium

Indium is an AI-driven digital engineering company that helps enterprises build, scale, and innovate with cutting-edge technology. We specialize in custom solutions, ensuring every engagement is tailored to business needs with a relentless customer-first approach.

Our expertise spans Generative AI, Product Engineering, Intelligent Automation, Data & AI, Quality Engineering, and Gaming, delivering high-impact solutions that drive real business impact.

With 5,000+ associates globally, we partner with Fortune 500, Global 2000, and leading technology firms across Financial Services, Healthcare, Manufacturing, Retail, and Technology—driving impact in North America, India, the UK, Singapore, Australia, and Japan to keep businesses ahead in an AI-first world.

USA

Cupertino | Princeton
Toll-free: +1-888-207-5969

INDIA

Chennai | Bengaluru | Mumbai | Hyderabad | Pune
Toll-free: 1800-123-1191

UK

London
Ph: +44 1420 300014

SINGAPORE

Singapore
Ph: +65 6812 7888

www.indium.tech



For Sales Inquiries
sales@indium.tech



For General Inquiries
info@indium.tech

