Alazar 高速数据采集卡
用于消费电子产品的自动化调试

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Using PCI Digitizers for Automated Testing of Consumer Electronics
Alazar PCI 数据采集卡在消费电子产品自动调试上的应用

The Problem
问题

A manufacturer of DVD players required calibration of one of the amplifier prior to assembly into the final product. The cost of including an auto-calibration circuit within the amplifier was deemed to be impractical, as it would raise the cost of good beyond the acceptable level.

一家 DVD 播放器制造商，需要在装配之前校准一个放大器。该制造商认为：如果在放大器电路板内安装一个自动校准电路，增加的成本远远超出可接受的范围。

Manufacturing engineering proved the concept of calibrating this amplifier by measuring the output signal using a digital oscilloscope and varying the gain by adjusting a digital trim-pot on the board, all under full programmatic control.

制造工程部门设计了一种校准方案，即：在电路板中采用一个数字电位器，可以微调放大器的增益；同时采用数字示波器检测输出信号；上述过程完全由软件控制。在数字示波器的采样的同时，调节数字电位器使输出幅度达到预期指标。

The time it took to acquire data using a GPIB-controlled oscilloscope was deemed to be unacceptably high, as it reduced the production throughput, thereby increasing the cost of manufacturing.

如果这个方案使用 GPIB 控制的示波器，采集数据的时间过长，而无法接受。因为这降低了产量，增加了制造成本。

The Solution
解决方案

The customer purchased an ATS850 waveform digitizer board from AlazarTech to evaluate in his own environment.? The customer was able to quickly verify that the ATS850 would suit their application perfectly.

该客户向 AlazarTech 购买了 ATS850 数据采集卡，用于方案的可行性评估。客户很快发现 ATS850 非常理想。

The oscilloscope-like features of the ATS850, such as programmable input ranges from 5mV/div to 5V/div, programmable AC/DC coupling, programmable 1MW/50W impedance, programmable on-board acquisition memory and simple-to-use triggering made it easy to replace the oscilloscope with an ATS850.? And the PCI bus data throughput offered by the ATS850 (>20 MB/s as compared to 10 KB/s offered by GPIB) helped the customer achieve his goal of testing the required

number of units per hour.

ATS850 具有与数字示波器相同的特点，如输入范围可编程（5mV/div 至 5V/div），耦合方式可编程（交流/直流），输入阻抗可编程（1Mohm/50ohm），可编程的板载采集存储器，以及使用简单的触发方式等，这些特征都使 ATS850 易于替代数字示波器。同时，ATS850 提供的 PCI 总线，数据流量很高（>20 MB/s，PCIe 总线的采集卡可达 1.4GB/s；而 GPIB 提供的数据流量为 10 KB/s）， 采用这一方案，将帮助客户实现每小时大量产品的快速、自动调试的目标。

The customer had a choice of purchasing other PC based digitizers on the market, but those were found to be too expensive, whereas the customer's capital equipment budget for the test system could only afford a lower price for the waveform digitizer.? Once again, the AlazarTech solution won hands down.

市场上有很多用于 PC 机的数据采集卡，供客户选择购买，但是其他品牌产品的价格过高。而客户在测试系统的预算，只能购买价格较低的数据采集卡。因此在价格考量上，AlazarTech 的解决方案再一次获得了成功。

The final concern the customer had was QoS (Quality of Signal).? Even though the customer could not afford to pay a high price for the digitizer, he was not willing to compromise the quality of the digitized signal.? The ATS850 satisfied the customer with its 42 dB SNR at 4 MHz and very low chattering noise.? In fact, the customer discovered that the ATS850 performed even better than the written specifications.

客户最后关心的一点是 QoS（信号质量）。即使无法购买高价的数据采集卡，客户也不会对数据采集信号的质量放低要求。凭借 4 MHz 时 42 dB 的信噪比，以及极小的抖动噪声，ATS850 能够满足该客户的要求。事实上，该客户发现 ATS850 的性能超出了该产品的规格书。

The customer undertook a software development project to incorporate the ATS850 into the test software already developed in the proof of concept stage.? This project also went very smoothly, thanks to the easy to use Application Programming Interface (API) offered by the ATS850 Software Development Kit (SDK).

该客户因此实施了一个软件开发项目，将 ATS850 应用于上述自动调试、检测方案中。由于 ATS850 软件开发工具包（SDK）提供了方便的应用程序接口（API），该项目进行地非常顺利。

Conclusion

结论

The customer adopted the ATS850 as the waveform digitizer in the manufacturing test stand with minimal costs and was able to meet the product requirements well within the capital budget allocated by the program manager.

客户采用了 ATS850 数据采集卡，用于生产过程的调试工位。从而使方案成本降到最低，同时能够满足产品的技术要求，并且费用也在预算之内。