A New Choice for ADC Testing: The A10 Audio Analyzer

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Introduction

In the field of electronic device development, the performance of Analog-to-Digital Converters (ADCs) directly determines the quality of the system. Therefore, ADC testing is an essential step. ADC testing typically requires evaluation from multiple aspects such as accuracy, power consumption, and transmission speed to ensure it meets design requirements and the needs for accuracy and reliability in practical applications. How can accurate ADC testing be achieved amidst numerous influencing factors like noise interference, signal distortion, and environmental fluctuations? The A10 Audio Analyzer provides engineers with an excellent ADC testing solution.

Three Core Advantages

1. Exceptional Hardware Test Equipment

Are traditional signal sources insufficiently accurate? The A10, designed specifically for R&D testing, integrates a high-precision signal source and analyzer into a single unit. It is further equipped with the ADCtest function, specifically built for ADC testing, offering amplitude accuracy of ±0.03dB and residual THD+N (20kHz BW) less than -117dB. This provides stable test signals and supports analog signals within the 5Hz to 204kHz frequency range, meeting most engineers' testing needs.

2. Rich Test Metrics, Supporting One-Click Parameter Analysis

Beyond the ADCtest function, the device also provides various metric testing capabilities such as Signal-to-Noise Ratio (SNR), Signal-to-Noise and Distortion Ratio (SINAD), and Effective Number of Bits (ENOB). Engineers can select different test items based on their needs or directly set up test templates to automatically test multiple metrics with a single click.

➢ Signal-to-Noise Ratio (SNR): Reflects the degree to which a signal is affected by

noise during transmission and processing within a communication system.

➢ Signal-to-Noise and Distortion Ratio (SINAD): Reflects the ratio of the signal amplitude to all other spectral components (including harmonics but excluding DC). It provides a good indication of the overall dynamic performance of an ADC.

➢ Effective Number of Bits (ENOB): The resolution of an ADC is usually specified by the number of bits used to represent the analog value. For example, a 12-bit ADC ideally has an ENOB close to 12. However, in practical applications, noise in the real signal and imperfections in the actual circuitry introduce additional noise and distortion, all of which reduce the ADC's precision in terms of bits. Therefore, ENOB serves as a more practical performance metric to describe the effective resolution of an ADC under specific conditions.

3. Hardware-Level Protection, Safeguarding R&D

Engineers can not only flexibly set the output amplitude and frequency of the test signal, but as shown in Figure 1, the A10 also supports common-mode voltage settings and provides pin voltage threshold setting functions. This enables more effective protection of the test circuit, ensuring test accuracy and safety.
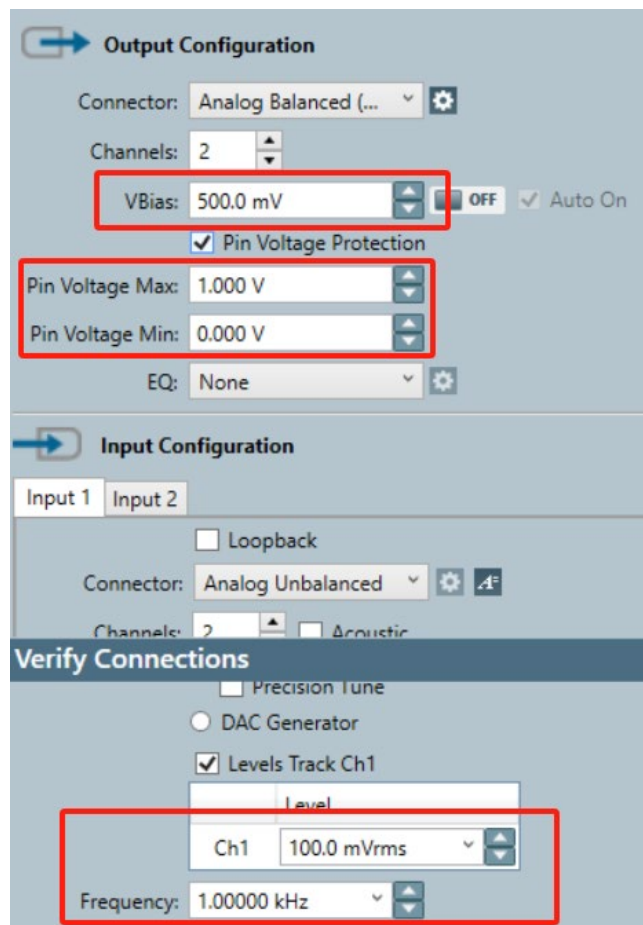
Figure 1

- ±0.1mV common-mode voltage fine-tuning, precisely matching complex circuit bias requirements;
- Configurable pin protection thresholds: Automatic cut-off in case of overvoltage, avoiding the risk of chip burnout.

Product Introduction

Figure 2 Audio Analyzer A10

- Standard support for SPDIF/TOSLINK/AES/EBU digital interfaces;
- Supports various digital interface expansions including BT/HDMI/I2S/PDM;
- Complete and powerful electroacoustic analyzer functionality;

- ➤ Codeless automation and comprehensive API interface;

- ➤ Supports LabVIEW, VB.NET, C#.NET;

- ➤ Automatically generates test reports in various formats;

- ➤ Over 60 test functions, including oscilloscope, spectrum analyzer, continuous fast sweep, etc.

To learn more about ADC testing, please contact Beijing Doewe Technologies Co., Ltd. Tel: +86-10-64327909.