Key Differences Between the PCM270x and PCM270xC

Audio Converter Products

ABSTRACT

This document presents the major differences between the PCM270x and PCM270xC audio data converters.

Contents

1   Overview

The PCM270xC audio devices have been updated to pass the Microsoft® Windows® Logo Kit (WLK) v1.5. This certification makes these converters fully compatible with the Windows 7® operating system. Previous generation PCM270x devices remain functionally compatible with Windows 7; however, manufacturers cannot pass WLK tests with this device, and therefore are not allowed to put the Microsoft Windows 7 logo on the product.

Table 1 lists the descriptors that have been changed on the PCM270xC devices.

Table 1. Descriptor Differences Between the PCM270x and PCM270xC Devices

Descriptor	PCM270x	PCM270xC
Product ID	0x2704/0x2705/0x2706/0x2707	0x27C4/0x27C5/0x27C6/0x27C7
Vendor strings	Burr-Brown from TI	BurrBrown from Texas Instruments
Product strings	USB Audio DAC	USB AUDIO DAC

As Table 1 indicates, the primary changes here are the vendor string and the product string.

2   Volume Control Behavior Change

The volume control panel in Windows actually changes gain on the PCM270x device itself, rather than allowing users to perform a simple digital mix with the operating system.

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In the transition from WindowsXP through Vista and Windows 7, changes were made to the behavior and scale of the volume sliders. As a result, TI has now updated the volume control curves in the PCM270xC. The revised graph is shown in Figure 1.

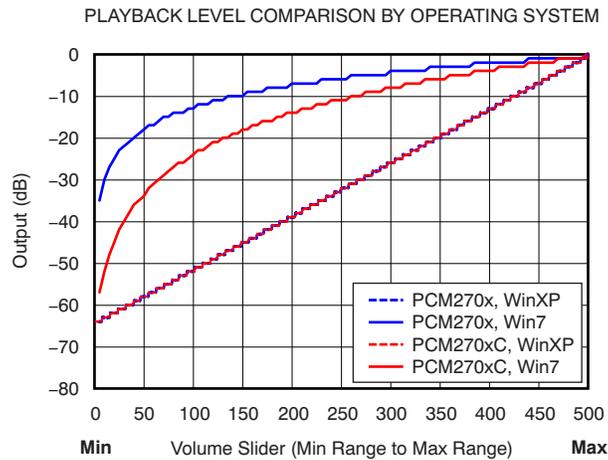PLAYBACK LEVEL COMPARISON BY OPERATING SYSTEM

Figure 1. Playback Level Comparison of PCM270x/270xC Devices by Operating System

In Windows 7, as a result of the smaller number of steps, a small change on the slider can have a drastic effect on the output volume. With the previous generation PCM270x devices, a single volume step in Windows 7 can be as much as five steps in Windows XP. Therefore, the volume curve was changes to compensate for this operating system change.

3 Design and End User Impact

The original volume curve was never published in the PCM270x product data sheet, because most users do not tend to dial in an exact amount of attenuation/gain. Users are more likely to slide the bar up and down until they find a comfortable listening level.

Windows 7 users, on the other hand, now find the volume controls in the new operating system significantly more sensitive and easier to use with the new volume control curves in the PCM270xC family of devices.

Designers using multiple PCM270x devices in the same product should make efforts to ensure they are not mixing PCM270xC and non-C (that is, PCM270x) devices together; volume behavior varies between these two generations of devices.

From the perspective of the *PC Speaker* and *PC Accessory* features, there should be little impact for end users. They will continue to use the volume control sliders until they find a comfortable listening point. However, systems that require specific output voltages may need to be reconfigured if the output is attenuated from the typical 0-dB attenuation point in systems by default.

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