Audio Skip Test for MP3 Players using U2300A Series High Density Multifunction USB DAQ

Application Note

Contents

Introduction

More and more consumers are turning to MP3 or MP4 players. With the growing number of MP3 or MP4 manufacturers in the business, these players have become low margin items and are mass–produced. There are many ways to test an MP3 player. One major dependency in testing is the common computer interface (normally USB) to load the audio.

It is crucial to inspect the quality of these players after assembly. This application note looks into how the audio skip test in an aging test can practically be useful to MP3 player manufacturers.

Quality Check (QC) for manufacturing and production

During QC, 1 kHz single tone (sine wave) test signal is loaded into the MP3 player and set to playback continuously for a period of time to observe and verify that there is no audio skip sound (for example, 20 hours). The actual time taken is the testing specification for the QC. This period of time differs from company to company. The following explains the test setup for this QC method.

In this test setup, the MP3 player is the electronics under test (EUT) set. The audio output of the player is connected to a 16 ohm load. This load simulates the earphone's impedance. The load is then connected to a noise meter, which is also known as a distortion meter or a flutter meter. The noise meter displays the frequency that is captured at the input channel. The noise meter has a BNC voltage output that is connected to a DAQ device, which is linked to the PC through USB. The DAQ provides an analog–to–digital conversion (ADC) so that the data acquired can be logged into the PC for post–analysis purposes. The voltage output port will send a voltage level that corresponds to the frequency of the measured signal. The voltage varies with respect to variations in the frequency of the measured signal.

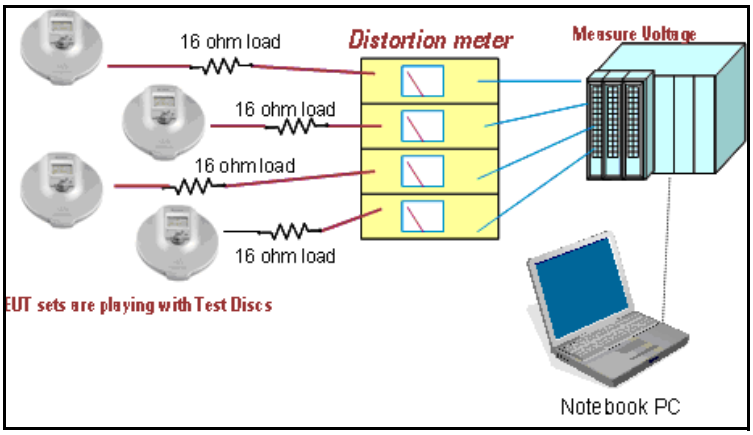

Figure 1 Quality check test setup

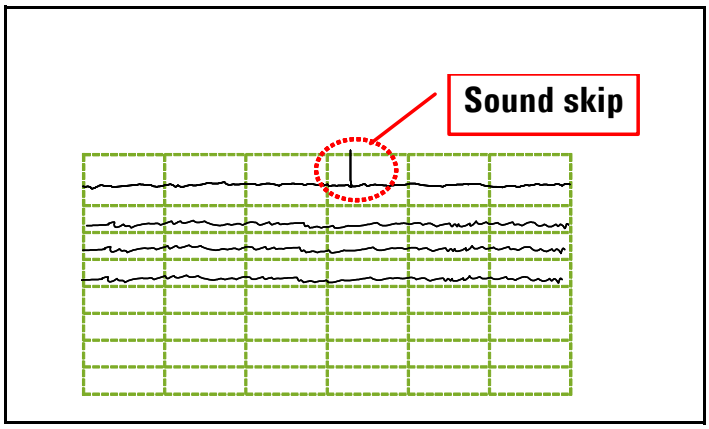

Figure 2 Four measured signals with detected sound skip on one channel

Figure 1 shows measured signals from four EUT sets. Figure 2 shows the four channels, that are equivalent to the four EUT sets. The top signal has a sound skip–a glitch of more than 1 kHz is detected during the test. In other words, this EUT failed the QC test due to the slight voltage variation.

The failure, however, is dependent on the tolerance of frequency in the company's specifications.

Advantages of Agilent's USB DAQ device in QC Test

- Since USB is the most common interface that comes with PCs nowadays, no additional hardware is needed, unlike GPIB.
- With a USB DAQ device, the tested signal is sent directly to the PC. It is possible to generate test reports or post–analysis results with the data acquired via programming.
- DAQ device comes with many analog channels. This makes it possible for many EUTs to be tested simultaneously and, at the same time, increases test throughput.
- Its ease of use and small size are among the added features that make our DAQ device useful for QC tests.

Conclusion

The DAQ device poses a simpler and affordable solution for QC test requirements in the production of MP3 players.

Related Agilent literature

- *System Developer Guide – Using USB in the Test and Measurement Environment* (Application Note 1465–12)

Additional information is also available at www.agilent.com/find/U2300A or contact your nearest Agilent sales office or sales representative.

www.agilent.com

800 123-4567

Agilent Email Updates

www.agilent.com/find/emailupdates

Get the latest information on the products and applications you select.

Agilent T&M Software and Connectivity
Agilent's Test and Measurement software and connectivity products, solutions and developer network allows you to take time out of connecting your instruments to your computer with tools based on PC standards, so you can focus on your tasks, not on your connections.

Visit **www.agilent.com/find/connectivity** for more information.

By internet, phone, or fax, get assistance with all your test & measurement needs.

Online assistance:
www.agilent.com/find/assist

Phone or Fax
United States:
(tel) 800 829 4444
(fax) 800 829 4433

Canada:
(tel) 877 894 4414
(fax) 800 746 4866

China:
(tel) 800 810 0189
(fax) 800 820 2816

Europe:
(tel) (31 20) 547 2111
(fax) (31 20) 547 2390

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Korea:
(tel) (82 2) 2004 5004
(fax) (82 2) 2004 5115

Latin America:
(tel) (650) 752 5000

Taiwan:
(tel) 0800 047 866
(fax) 0800 286 331

Other Asia Pacific Countries:
(tel) (65) 6375 8100
(fax) (65) 6836 0252
Email: tm_ap@agilent.com

Product specifications and descriptions in this document subject to change without notice.

Printed in USA, November 7, 2006
5989–5561EN

Agilent Technologies