How To Guide

AV Delay

Audio Video Delay Measurements

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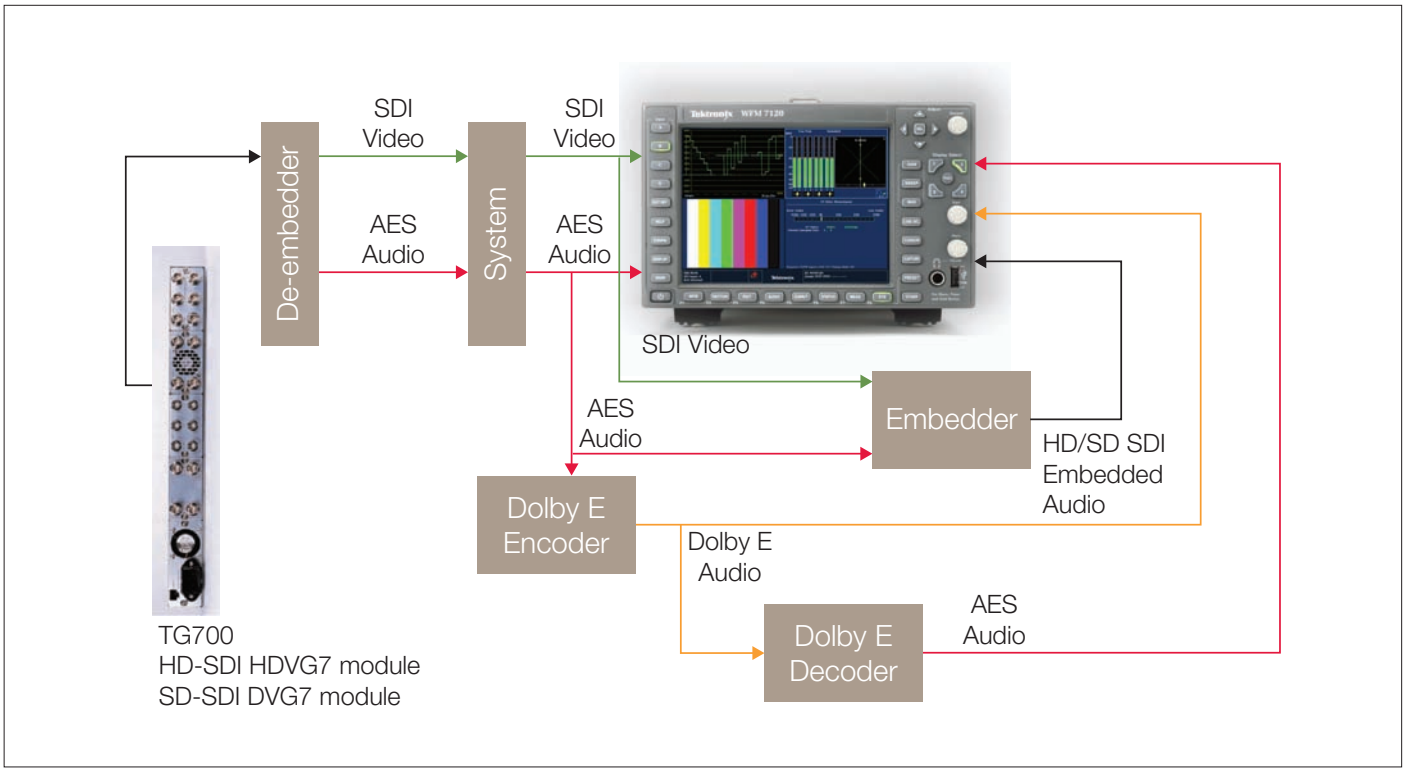

Figure 1.

Summary

Audio Video Delay, sometimes referred to as Lip Sync is not new. It was around during the days of analog and has become even more prevalent since the transition to digital. It is further compounded by the numerous audio formats and compression schemes being implemented.

Introduction

Figure 1 is a simplified version of how a system may be configured for testing using the TG700 Signal Generator and the WFM7120 Waveform Monitor with the AV Delay Option.

The output of the TG700 from the HDVG7 or DVG7 may be sent around the facility as an embedded audio data within the SDI video signal.

In some case a de-embedder can be use to extract the SDI Video and AES audio signal which can then be routed on separate paths through the system.

Figure 2.

At any point the WFM/WVR can be used to measure the signal, simply select the appropriate video input and select the AES audio input for the audio monitoring of the signals.

Alternatively the system can re-embed the audio and video together in the SDI signal and the measurement can be made using the embedded audio input configuration.

The AES audio signal can also be applied to the Dolby encoder and the Dolby stream can be sent directly to the instrument, or can be decoded by a separate Dolby E decoder and applied as an AES signal to the WFM/WVR.

Note: An appropriately configured WFM/WVR will work with SDI video and embedded, AES or Dolby audio.

This is an “out of service” test so this signal would not normally be transmitted during normal broadcast operation. It allows the system or parts of the system to be qualified to ensure that the various processing parts of the system are not introducing delay between audio and video.

It is recommended that this test be conducted point-to-point as well as end-to-end. Devices that contribute significant AV delay (typically Video Delay as Audio encoding and decoding is much faster than Video Encoding and Decoding) are labeled as to their particular delay characteristics so that if it becomes necessary to replace a device, this change can be taken into account, thus avoiding the introduction of AV Delay problems. This is facilitated by the AV Delay Status screen that shows delay in both Fields and Seconds in Figure 2, in the lower right-hand tile of the screen display.

Additionally the test sequence could be added to the leader of the program material to allow testing of the audio-to-video in the channels before transmission of the material.

References

- WFMxx20 Series Waveform Monitors
- WVRxx20 Series Rasterizers
- AV Delay Webcast Link

Data Sheets, Fact Sheets and additional application notes can be found at: http://www.tek.com/products/video_test/signal_monitors.html

- TG700 Generator

Data Sheets, Fact Sheets and additional application notes can be found at: http://www.tek.com/products/video_test/signal_generators.html

Contact Tektronix:

ASEAN / Australasia (65) 6356 3900
Austria +41 52 675 3777
Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
Belgium 07 81 60166
Brazil +55 (11) 40669400
Canada 1 (800) 661-5625
Central East Europe, Ukraine and the Baltics +41 52 675 3777
Central Europe & Greece +41 52 675 3777
Denmark +45 80 88 1401
Finland +41 52 675 3777
France +33 (0) 1 69 86 81 81
Germany +49 (221) 94 77 400
Hong Kong (852) 2585-6688
India (91) 80-42922600
Italy +39 (02) 25086 1
Japan 81 (3) 6714-3010
Luxembourg +44 (0) 1344 392400
Mexico, Central/South America & Caribbean 52 (55) 54247900
Middle East, Asia and North Africa +41 52 675 3777
The Netherlands 090 02 021797
Norway 800 16098
People's Republic of China 86 (10) 6235 1230
Poland +41 52 675 3777
Portugal 80 08 12370
Republic of Korea 82 (2) 6917-5000
Russia & CIS +7 (495) 7484900
South Africa +27 11 206 8360
Spain (+34) 901 988 054
Sweden 020 08 80371
Switzerland +41 52 675 3777
Taiwan 886 (2) 2722-9622
United Kingdom & Ireland +44 (0) 1344 392400
USA 1 (800) 426-2200
For other areas contact Tektronix, Inc. at: 1 (503) 627-7111
Contact numbers updated 30 October 2008

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