

Dear Customer:

Subject: DIR1701 and DIR1703 UNLOCK problem

### Summary of Problem and Proposed Solution

**The DIR1701 and DIR1703 are not recommended for new designs.** The DIR1701/DIR1703 digital audio interface receiver is unable to properly lock onto S/PDIF audio data that is encoded at more than one sampling frequency. To lock onto the new sampling frequency, the DIR1701/DIR1703 must be reset using an external control device, such as a microcontroller or DSP. If the sampling frequency of the encoded audio data never changes, however, the DIR1701/DIR1703 will lock onto S/PDIF signals correctly.

### Detailed Description

When the sampling frequency changes, the DIR1701/DIR1703 unlock and fail to re-lock at the new sampling rate. In general, during normal operation an S/PDIF receiver outputs an UNLOCK flag when the sampling frequency of the S/PDIF data changes. After the receiver has locked to the new sampling frequency, the device outputs a LOCK flag. The DIR1701/DIR1703 is unable to correctly re-lock onto the new sampling frequency. Specifically, after the sampling frequency changes the LRCKO output becomes unstable and can create noise that will be passed through an audio DSP or audio DAC.

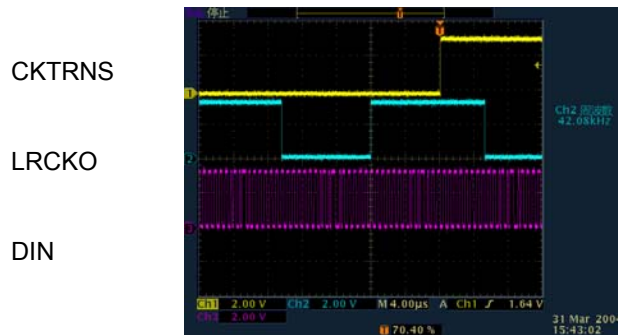


Fig. 1 LRCKO duty cycle and preamble position change at CKTRNS = HIGH

To lock onto a new sampling frequency, the DIR1701/DIR1703 requires an external reset signal every time the S/PDIF audio sampling frequency changes. A microcontroller or DSP would typically be required to provide this reset signal in a system.

For technical assistance, please send an e-mail to [audio-jp-dir@list.ti.com](mailto:audio-jp-dir@list.ti.com).