



12/26/01

Model: TX-DS595, TX-DS696, TX-DS797, and TX-DS898

Problem: Intermittent sound dropout:

Solution: None (Please read information below)

Some very recent release DVD movies such as Pearl Harbor and Jurassic Park III may not play through the above listed model receivers when set for Dolby Digital 5.1. The units will work fine with DTS settings. Both settings are accessible through the DVD software menu, under language or Audio setup function. By selecting the **DTS** mode this problem can be avoided. There is no hardware or firmware solution given at this time.

Various companies are studying the issue of compatibility regarding Dolby Digital Extended Bitstream Encoded materials and as soon as final technical solution is found, we will up date you.

Further technical description is being provided below:

Audio Dropout Problem

Some DVD content (e.g., "Pearl Harbor", "Jurassic Park III") is not able to play properly on some decoder products, while it plays correctly on others. For those systems that are affected, the decoder exhibits frequent or even continuous audio dropouts.

1. Audio dropouts only occur in decoder products if the following conditions are met:
 - a) The decoder product must have enabled a specific interrupt in the DSP Semiconductor IC.
 - b) The decoder product must react to this interrupt in a way so as to cause audio dropouts.

In addition, this problem is only encountered if the decoder product is decoding a particular type of Dolby Digital bitstream:

- a) The bitstream must have been encoded with the latest version code in the DP569 encoder.
 - b) The encoder must have been configured with the "Extended Bitstream Parameters" feature enabled.
2. There is a possible solutions to eliminate this problem, namely:
 - a) Change the way Dolby Digital bitstreams are made to avoid triggering the interrupt.
3. These steps are already in process:

- a) Dolby is preparing a firmware update for the DP569 encoder, which will allow encoding of bitstreams using the “Extended Bitstream Parameters” feature that do not trigger this interrupt. This firmware revision will be available in early January 2002 for DP569 customers.
 - b) In the meantime, Dolby has advised key content producers of the situation, and suggested that they disable the “Extended Bitstream Parameters” feature for any new content that they are mastering.
4. Dolby's DP569 encoder is currently the only encoder product to support the “Extended Bitstream Parameters” feature. The current firmware is operating correctly relative to the Dolby Digital bitstream specification.
 5. Several recent DVD releases, including “Pearl Harbor” and “Jurassic Park III”, have been mastered using the DP569 with “Extended Bitstream Parameters” enabled.

Technical Description of the Problem

The DSP provides an audio configuration change function, which may be used to inform the host that one or more audio configuration parameters have changed in the incoming coded bitstream. In some products, audio configuration parameter changes are used to trigger short mutes, so that the consumer does not hear audible glitches during configuration changes.

Decoder products using such IC's can detect audio configuration changes in two ways:

1. During decoding, the DSP in use provides access to many bitstream parameters. By using a “Solicited Read Message” protocol, the host can read the current values of any or all of these parameters, and manually detect configuration changes.
2. The DSP may also offer an “Unsolicited Read Message” feature, whereby the host can be automatically informed (via software interrupts) of changes in the audio configuration parameters. In order for this function to be active, the host must enable the “Audio Config Change Notification Enable” feature in the DSP IC.

If the “Audio Config Change Notification Enable” feature is enabled, the host will receive a software interrupt whenever any of the audio configuration parameters change. The specific list of Dolby Digital parameters that trigger this interrupt depends upon the version of the DSP. In the latest firmware version, the parameters that trigger the interrupt are:

acmod, bsid, lfeon, dsurmod, dialnorm, and timecod2.

The *timecod2* parameter was added to this list in order to represent the Dolby Surround EX mode flag, *dsurexmod*. According to the Dolby Digital “Annex D” specification, *dsurexmod* is carried in the two most significant bits of the *timecod2* parameter (assuming the *bsid* parameter is set to 0x6). However, other fields are also carried in the *timecod2* parameter as well. In particular, the least significant bit of this parameter is used to carry the Encoder Information parameter, *encinfo*.

In practice, the *dsurexmod* parameter should not change over the course of a particular program. However, the *encinfo* parameter was designed to change frequently from one frame to the next. In typical content that has been mastered using the “Extended Bitstream Parameters” functions, the *encinfo* parameter will change state every two to three frames.

As a result of these frequent changes in the *encinfo* parameter, if the “Audio Config Change Notification Enable” feature is enabled in the DSP IC, the host will receive very frequent change notification interrupts. These frequent interrupts may cause problems in two ways:

1. If the host is designed to mute during audio configuration change events, the result will be frequent audio dropouts. If the duration of the mute is longer than a few audio frames, then these audio dropouts may be continuous.

2. If the host is designed in such a way that it is unable to service these interrupts quickly enough, the system may overflow and lead to a host shutdown or reboot.

About the Encoder Information parameter

The *encinfo* parameter was added to the Dolby Digital “Annex D” syntax in order to provide a way for Dolby to perform quality control and verification testing on encoded content. This parameter uses a low-rate data channel to convey a range of information about the encoder used to create the bitstream, such as the encoder version, the encoder settings, etc.

In order to recover this information, special monitoring tools are used to capture this bit from frame to frame over a large number of sequential frames. When these bits are assembled together, they form a larger buffer that contains the various encoder information values.

About Dolby’s upcoming DP569 firmware update

In early January 2002, Dolby will release to its DP569 customers a firmware update that disables the *encinfo* parameter. All other “Extended Bitstream Parameters” features including the Dolby Surround EX mode flag will continue to operate as they do currently.