

MAYAH Communications

Application Note 14

Difficulties in using stereo and joint stereo with the CDQPrima

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1 Definitions

Using MPEG Layer 2 with stereo or joint stereo for an audio transmission between MAYAH codec and CDQPrima generates some unexpected problems. For analyzing the reasons for these problems, we have to accent the differences between the two modes.

1.1 Stereo

In stereo mode the right and left channel of the signal are completely and separately encoded and decoded.

1.2 Joint Stereo

Using the joint stereo mode, the signal only is completely encoded and decoded within the lower frequencies (up to ca. 3,5 kHz). Above that value, only the level differences are encoded (decoded) entirely, the phase information is not, i. e. the panning is not transmitted.

1.3 Stereo versus Joint Stereo

Using either stereo or joint stereo with MPEG Layer 2 has an important effect on the signals bandwidth. For example, with a bit rate of 128 kBit/s and a sample rate of 48 kHz a difference of approximate 5 kHz occurs. While stereo with its completely encoded information for both channels has a bandwidth of about 10 kHz, joint stereo has a bandwidth of 15 kHz by neglecting the phase information of the higher frequencies.

Choosing between the two modes thus depends on the preferences. For e. g. classical music it may be more important to have all panning information to transmit the sound of the orchestra as close to reality as possible. On the other hand there might be transmissions

which pay more attention to the bandwidth and neglect the loss of phase information in higher frequencies.

2 Compatibility problems

The problems with the above frequency-dependent encoding and decoding arise when a MAYAH codec and its Automatic Codec Detection (Flashcast) have to get compatible with a CDQPrima.

The CDQPrima has the peculiarity of dynamically changing its mode depending on the frequency of the incoming or outgoing signal. This means, that, if in the beginning of an audio transmission the setting for mode is joint stereo and the signal surmounts the critical value for frequency, the mode switches automatically to stereo and back again if the frequency is reduced once more. This results in the signal LED of the CDQPrima blinking continuously because the mode is always changing.

Of course this generates a failure within the MAYAH codec because the Automatic Codec Detection (Flashcast) can't work properly.

3 Solving the problems with the MAYAH codec

Available with version 1.2.0.0

For solving these compatibility problems with the CDQPrima, it was decided to generate some exceptions for the Automatic Codec Detection (Flashcast) of the Centauri. Now if the MAYAH codec detects one of the following Codecs on the far end:

- **CDQPrima**
- **CDQ 2000/2001**
- **Telos Zephyr**
- **Prodys Pronto**

and additionally these settings:

- **Algorithm: MPEG Layer 2**
- **Detected Mode: Stereo**

the Automatic Codec Detection is disabled and the mode that will be used depends on the mode of the MAYAH codec encoder. If this value is

- **Joint Stereo** the used mode is **joint stereo**
- **Stereo** the used mode is **stereo**