Preliminary Data Sheet Supplement

Subject:	New Virtualizer for Version A2
Data Sheet Concerned:	DPL 3518A, DPL 3519A, DPL 3520A 6251-423-1PD, Edition July 31, 1997
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New Virtualizer for the Dolby Pro Logic Processor DPL 3518A, DPL 3519A Version A2

The device includes an improved version of our virtualizer called “3D-PANORAMA”. The new algorithm has been approved by the Dolby*) Laboratories for compliance with the “Virtual Dolby Surround” technology.

It is included in following devices:

– DPL 3518A – A2

– DPL 3519A – A2

Revised and/or Additional Paragraphs to the DPL 3518A, DPL 3519A, DPL 3520A Data Sheet

9.1.17. Surround Reproduction Modes

Surround Reproduction Modes	0040_{hex} L (DPL 3518/19)	
NORMAL	0000 0000 RESET	00_{hex}
PHANTOM	0001 0000	10_{hex}
WIDE	0010 0000	20_{hex}
THREE_CHANNEL	0011 0000	30_{hex}
CENTER_OFF	0100 0000	40_{hex}
PANORAMA	0101 0000	50_{hex}
3D-PANORAMA	0110 0000	60_{hex}

The standard mode to reproduce Dolby Pro Logic Surround is NORMAL. All four channels: L, C, R, and S are in operation. Low frequency signals of the C channel are distributed to the L and R loudspeakers. This enables the center speaker to be a smaller model than the L and R speaker. If all three front speakers are identical and capable of reproducing low bass information, and if equal power is available in the L, C, and R amplifiers, then it may be beneficial to use the WIDE mode. The center channel will then contain the full frequency range signal. The NORMAL and WIDE modes using 4 or 5 loudspeakers give the optimum solution for surround reproduction. Other modes using less loudspeakers create inferior surround effects.

If no center speaker is available, the PHANTOM mode prevents loss of the center information by splitting it up equally to the L and R speakers.

If no surround speaker is available, the THREE_CHANNEL mode can be used. This mode will confine the sound to the front speakers.

The CENTER_OFF mode provides a simple way to optimize the manual input balance. While switched off, the balance control can be adjusted for minimum dialogue level.

Surround sound can be reproduced to a certain extent even with two loudspeakers. The PANORAMA mode mixes all four surround decoder outputs to the L and R output channel without any loss of information.

A new development for the same purpose is “3D-PANORAMA”. It is an implementation of a qualified Virtual Dolby Surround algorithm which enables a wider range of acoustical sensations but for a smaller listening area.

Note: The equalizer function of the DPL must be switched off in PANORAMA and 3D-PANORAMA mode.

Application Tips for using 3D-PANORAMA

1. Sweet Spot

Good results are only obtained in a rather close area along the middle axis between the two loudspeakers: the sweet spot. Moving away from this position degrades the effect.

2. Clipping

For the test at Dolby Labs, it is very important to have no clipping effects even with worst case signals. That is: 2 Vrms input signal may not clip. The LINE/SCART input prescale of the MSP has to be set according to the data sheet (which is 25 dez).

– Test signals: sine sweep with 2 Vrms; L only, R only, L&R equal pase, L&R anti phase.
– Listening tests: Dolby Trailers (rain trailer, city trailer, canyon trailer...)

3. Scaling of the Virtualizer

The virtualizer can be used with 0 dB input gain (I2S prescale in the DPLA). Better surround effects with loud signals are obtained by reducing this presale by 6 dB (I2S Prescale reduced to 8 dez = –6 dB). Please note, that this reduces the output amplitude of the virtualizer block by 6 dB also.

4. Loudspeaker

The loudspeakers used and their positioning inside the TV set will greatly influence the performance of the virtualizer. The algorithm works with the direct sound path; reflected sound waves reduce the effect. Resultingly, it is very important to have as much direct sound as possible compared to indirect sound.

In that sense, only loudspeakers mounted in the front of the TV set are allowed. Loudspeakers radiating to the side of the TV set will not produce convincing effects. Good directionality of the loudspeakers towards the listener is optimal.

The virtualizer was specially developed for implementation in TV sets. Even for rather small stereo TV's, sufficient sound effects can be obtained. For small sets, the loudspeaker placement should be to the side of the CRT; for large screen sets (or 16:9 sets), mounting the loudspeakers below the CRT is acceptable (large separation is preferred, low frequency speakers should be outmost). Using external loudspeakers with a large stereo base will not create optimal effects.

The loudspeakers should be able to reproduce a wide frequency range; the most important frequency range starts from 160 Hz and ranges up to 5 kHz.

Great care has to be taken with systems that use one common subwoofer: A single loudspeaker cannot reproduce virtual sound locations. The crossover frequency must be lower than 160 Hz.

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