

ABSTRACT

**A DATA PROCESSING APPARATUS AND
METHOD FOR D=2 OPTICAL CHANNELS**

5 A data processing apparatus having a partial response forward equalizer (filter)
with sufficient number of taps to result in 7-tap target response, designed by jointly
optimizing the target response and the target coefficients to maximize an appropriate
signal-to-noise ratio (SNR) at the detector input, followed by a new post-processing
scheme enhances performance of the threshold based bit-by-bit detector designed for the d
10 $= 2$ optical channels. The resulting performance of the proposed scheme over a range of
channel densities of 4.5 and below (used on EFM/EFMPlus coded channels for CD/DVD),
is close to maximum-likelihood bound (MLB), and it is better than that of other schemes
at channel densities of 4.5 and higher. Advantageously, the detector of the invention is
simple in structure compared to conventional partial response Viterbi detector schemes.
15 By processing the detected data in accordance with a set of data correction rules, the
invention provides advantageous enhanced detection capacity.

(Fig. 2)