

Cnds-rules and pattern based signal recovery for multi-level signal decision making

ABSTRACT

This paper focuses on the pattern based decision making over a multilevel symbol coding, Duty-cycle Division Multiplexing (DCDM). The pattern based decision making is used to increase the bit generation reliability at the receiver. It is used in conjunction with the existing rules-based decision making, which leads to better Bit Error Rate (BER). In this study, a reference pattern is first established from a combination of signals of multiple users' data. Subsequently, a new signal is generated according to the established patterns. This signal is then transmitted over the optical medium. At the receiver, signal validation and bit generation are then taking place based on the DCDM regeneration rules. Due to the signal impairments, the received signal will be corrupted. The impairments may cause the signal patterns to differ from the transmitted patterns. These non-conforming patterns are classified as invalid patterns, which are then subjected to the error evaluation and pattern re-mapping. In this paper for the first time we have used a new pattern based decision making in order to increase the reliability of bit sequence generation at the receiver, which leads to better BER.

Keyword: DCDM; Optical receivers; Optical modulation; Optical signal detection; Signal to noise ratio