A CHANNEL QUALITY MONITOR FOR READ CHANNEL IC

ABSTRACT OF THE INVENTION

The present invention discloses a method and apparatus for monitoring a read channel in a disk drive system and calibrating the disk drive system. A comparator is provided to detect the data samples that fall within a pre-programmed distribution window from a number of sectors in each zone of a disk. The output of a comparator is digitized and sent to a logic block to qualify the valid samples. A relative counter or histogram of the detected data samples is obtained. The valid sample count is fed to a n-bit counter that can be accessed via a serial port. The channel parameters can be adjusted based upon a relative figure of merit read off the serial port that reflects the distribution of the samples with respect to the target value after processing a statistically valid number of samples. After the initial calibration, the invention can be switched to count the number of invalid samples that fall outside the distribution window. Based upon the invalid sample count, the invention performs a fine tuning of the read channel system so that the invalid sample count decreases and reaches an acceptable value. The invention can be fully self-contained on chip if desired, and requires no more than the already existing serial port interface hardware, and very simple additional software.

FIGURE 10