pulse Perfect
Science & Technology

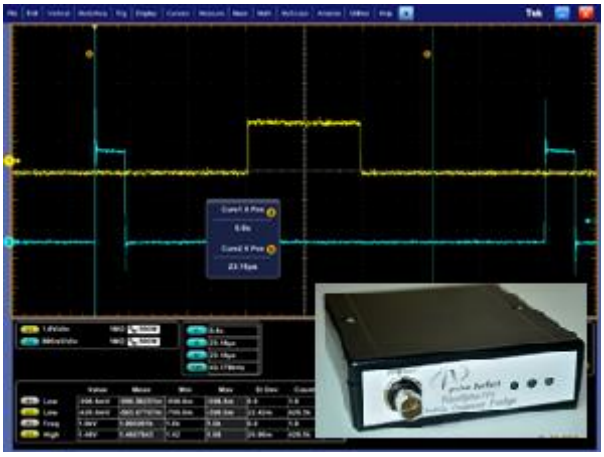
Data Compressor for Fiber Optics Links powered by DNAx Technology™

Pulse Perfect Corporation invented an unique algorithm based on the DNAx mathematical methodology. This algorithm is fully based on an equation that generates pulses as part of the compression operation. No statistical techniques are used in this process; this revolutionary algorithm was termed PSP-A (Polynomial Signal Processor, Accelerator). A data compression of 33% was achieved as the information is fully transmitted in 75% of the time needed to transmit the original uncompressed incoming data stream.

Fundamental Theoretical Assumptions. The DNAx Technology™ create a mathematical function that is able to define a continuous pulse, including the 0-1-0 transitions all in one single and simple equation that we have termed the DNAx Operator. The DNAx Operator is able to transform the mathematical function into a usable electrical signal and vice-versa. The similarity between the mathematical function and the generated signal is total. This unique property allows the PPM modulation occurs precisely.

Algorithm Implementation: The algorithm performs a code that will generate a compressed data stream utilizing with 25% of space savings than the uncompressed data stream. A given sequence of four bits transmitted in an uncompressed format in the unitary interval T_D, can be transmit on $0.75T_D$ after the compression.

The incoming data stream, represented by a four-bit symbol digital word, is fully represented by 16 pulse positions on the compressed data stream whose time cycle is completed 33% faster. The compressed data stream is represented by a PPM (pulse position modulation) signal.



Screen shot of a compressed PPM data stream, and the prototype modulator.

Comments: The use of mathematical techniques (Pulse-Perfect's DNAx Technology™), that are NOT a series of optimized approximations, and which inherently support parallel implementation techniques represents a significant opportunity to exploit the cost and performance benefits of state of the art FPGAs. The conceptual prototype presented in this promotional paper, illustrates only some of the potential benefits of the using the DNAx process. Achieving a 33% data compression implemented in a low cost FPGA chip indicates the potential success of the DNAx technique that also allows FPGA's to significantly enhance their overall performance.

Business Opportunities. Pulse Perfect is currently looking for partners to facilitate its growth to the next level. Pulse Perfect holds the exclusive rights to the U.S. DNAx Technology™ patents. For more information, please contact Pulse Perfect at opportunities@pulse-perfect.com. Learn more at www.pulse-perfect.com.