

Jitter Analysis On Data Streams

Automatically Determining Clock Frequency From Data

Many communications systems transmit data serially to other systems. In order to recover the data the receiving system needs to derive a clock from the serial data stream. This allows the receiver to synchronize with the data locally, automatically compensating for any variation in system timing. The clock derived from the data stream is then used to clock the data into the receivers system. One key factor of whether this can be accomplished successfully is the jitter in the data stream.

LeCroy's Jitter and Timing Analysis (JTA) option includes automatic extraction of clock frequency from the acquired data stream. This permits jitter analysis directly on the data streams. Figure 1 shows a time interval error measurement on the data signal shown in the upper trace. The reference level and frequency have been automatically determined by the JTA option based on an analysis of the data waveform.

Figure 2 shows how you can determine the clock period by using a histogram to determine the least common period difference in a waveform. JTA uses a similar statistical analysis to determine the clock frequency of the data stream.

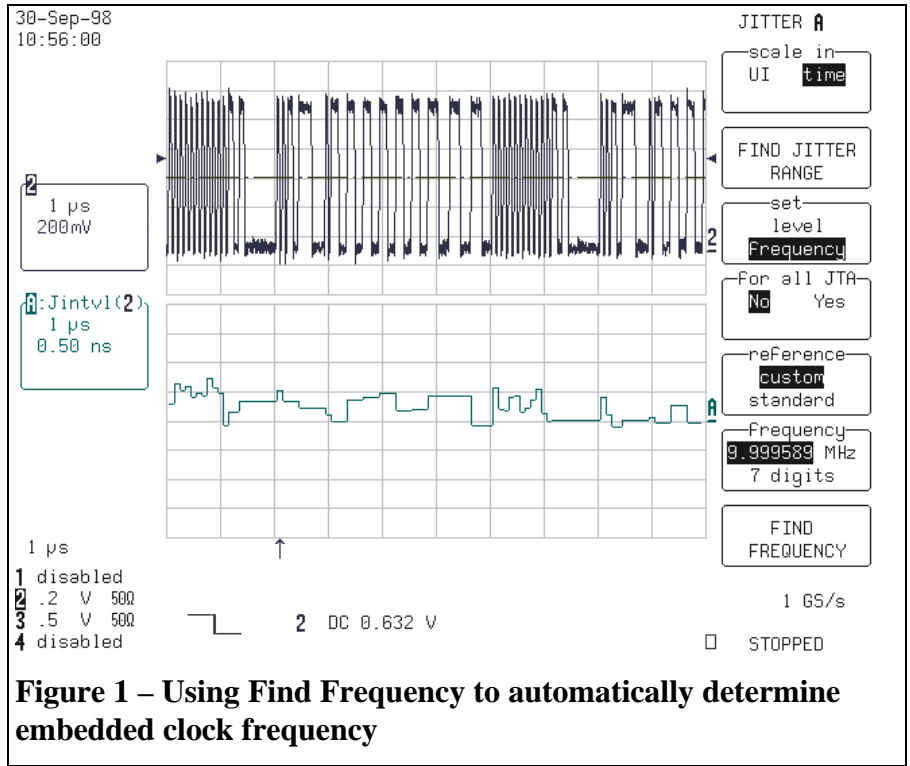


Figure 1 – Using Find Frequency to automatically determine embedded clock frequency

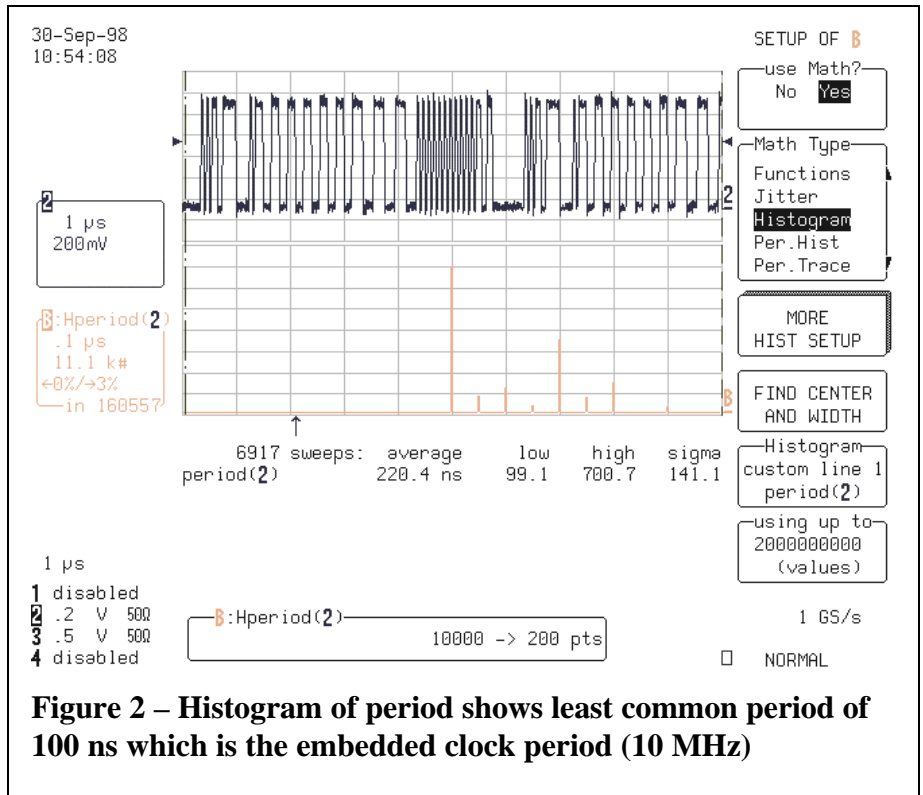


Figure 2 – Histogram of period shows least common period of 100 ns which is the embedded clock period (10 MHz)