U320 WILL USE SKEW COMPENSATION SO WHAT MATTERS IS HOW FAR OFF CLOCK AND DATA CAN BE,

AND

THE QUALITY OF THE DATA EYE OPENING.

EXTRAPOLATING THE SAME NUMBERS BEFORE ARE NOT MEANINGFUL IF SKEW COMPENSATION IS IMPLEMENTED AND WE HAVE NO REAL WAY OF MEASURING MOST OF THE NUMBERS.

MOST HIGH SPEED SERIAL BUSSES USE EYE MEASUREMENTS TECHNIQUES.

OUR COMPLICATION IS RELATING THE DATA EYE OPENING TO THE CLOCK SIGNAL. BECAUSE OF THIS WE HAVE TWO JITTER REQUIREMENTS (CLOCK AND DATA).

ALSO HOW DOES PRE-COMP EFFECT WHAT THE TRANSMITTER AND RECEIVER EYE WILL BE?
U320 TIMING SPECIFICATION

PROPOSAL WOULD USE A DEFINED TEST SETUP WITH A TRANSMIT EYE DEFINED WITH A MAX DISPLACEMENT OF THE CLOCK EDGE FROM THE DATA EDGE.

TRANSMITTER TEST SETUP

SAME AS CURRENT TEST SETUP

1/10/2000 Vince Bastiani
## U320 TIMING SPECIFICATION

### PROPOSED TRANSMITTER CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>U320</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signaling</td>
<td>NRZ</td>
<td></td>
</tr>
<tr>
<td>Nominal Data Rate</td>
<td>160</td>
<td>Mbit/sec</td>
</tr>
<tr>
<td>Nominal Baud Rate</td>
<td>160</td>
<td>Mbit/sec</td>
</tr>
<tr>
<td>Tolerance</td>
<td>100</td>
<td>ppm</td>
</tr>
<tr>
<td>Differential Amplitude</td>
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<td></td>
</tr>
<tr>
<td>Max</td>
<td>800</td>
<td>mv</td>
</tr>
<tr>
<td>Min</td>
<td>320</td>
<td>mv</td>
</tr>
<tr>
<td>Max (off)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rise/Fall Time (20-80%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1.0</td>
<td>ns</td>
</tr>
<tr>
<td>Min</td>
<td>1.2</td>
<td>ns</td>
</tr>
<tr>
<td>Differential Skew</td>
<td>250</td>
<td>ps</td>
</tr>
</tbody>
</table>
U320 TIMING SPECIFICATION

Symbol | Value | Units       
-------|-------|------------ 
X1     | 0.040 | Unit Intervals (UI) 
X2     | 0.200 | Unit Intervals (UI)
U320 TIMING SPECIFICATION

PROPOSED VALUES TRANSMITTER

1/10/2000 Vince Bastiani

ADAPTEC
U320 TIMING SPECIFICATION

PROPOSED VALUES AT RECEIVER
### U320 TIMING SPECIFICATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>U320</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>Signaling</td>
<td>NRZ</td>
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<tr>
<td>Nominal Data Rate</td>
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<tr>
<td>Nominal Baud Rate</td>
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<td>Mbit/sec</td>
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<tr>
<td>Tolerance</td>
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<td>ppm</td>
</tr>
<tr>
<td>Maximum Differential Sensitivity</td>
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<td>mv</td>
</tr>
<tr>
<td>Rise/Fall Time (20-80%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1.0</td>
<td>ns</td>
</tr>
<tr>
<td>Min</td>
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<td>ns</td>
</tr>
<tr>
<td>Differential Skew</td>
<td>5%</td>
<td>UI</td>
</tr>
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</table>
JITTER ISSUES

UNLIKE A SELF CLOCKING SYSTEM THE JITTER OF THE SEPARATE CLOCKING SIGNAL IS A CONCERN.

AT THE DRIVER END RELATIVE JITTER BETWEEN CLOCK AND DATA EYE SHOULD BE VERY SMALL.

AT THE RECEIVER END JITTER (WIDTH OF THE CLOCK EDGE SKEW) MUST BE CONSIDERED AND NEEDS TO BE SMALL COMPARED TO THE EYE OPENING.

NEEDS TO BE DEFINED AS SHOWN IN NEXT FIGURE. FIGURE SHOWN IS AN EXAMPLE. NEEDS TO BE CONFIRMED IF THIS IS REASONABLE.
U320 TIMING SPECIFICATION

0 V

0.5 NS

6.25 ns

800 mV max

100 mV min

0 V

-100 mV min

-800 mV max

1.5 ns max

4.75 ns min
U320 TIMING SPECIFICATION

SHOWS 0.86 NS JITTER ON CLOCK

2 meter cable receive signal receiver at end of cable

Δ: 12.6ns @: 20.5ns
C1 Pk-Pk 644mV
C2 Pk-Pk 768mV

Tek Run: 2.00GS/s Sample

23 Nov 1999 14:31:56
U320 TIMING SPECIFICATION

SHOWS 1.25 NS JITTER ON CLOCK

11 meter cable
R at end
NEED FURTHER DATA TO DEFINE LEVELS.

1. SET UP TEST CIRCUIT PER FIGURE A7 TO DETERMINE DRIVER EYE LIMITS.

2. TEST RECEIVER EYE LEVELS UNDER LONG, SHORT AND LOADED CABLE CONFIGURATIONS.

3. MEASURE LIMITS OF RECEIVER EYE JITTER UNDER LONG, SHORT, AND LOADED CABLE CONFIGURATIONS.

4. REVIEW AT NEXT MEETING.