

P1394b Simulation Taskforce

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Summary

- 1 Bug found in receive_speed_indication()
- 5 new Technical issues
- 5 new C Code nits
- 6 new Editorial Suggestions
- Upstart simulations running with speed negotiation

Bugs

#	Reference	Description
1.	Table 11-3 Upstarts v8 page 128	<p>Line 46 attempts to center the samples of the speed tone bits after the start bit is found. The worst case situation occurs when line 4 of "signal_detect_OK()" just grabs the rising edge of the start bit tone. "signal_detect_OK()" will then return slightly after the start bit tone has completed. To center our next sample, we need to wait for $(\text{SPEEDTONE_BIT_INTERVAL} + \text{TONE_DURATION} / 2)$ rather than the time currently specified. Simulations confirm this failure.</p> <p>Note: centering isn't really required given that the current code grabs subsequent samples with a period of $(\text{TONE_DURATION} + \text{ACTIVE_SAMPLE_INTERVAL})$. But if the chatter code is "fixed" with removal of <code>ACTIVE_SAMPLE_INTERVAL</code>, centering will be required.</p>

Technical Issues

#	Reference	Description
1.	Table 11-1 Upstarts v8	How do we specify or determine min-max range for time-based constants?
2.	Table 11-3 Upstarts v8 page 128	"signal_detect_OK()" includes code to filter for chatter on signal detect. However, filter seems to be ineffective: "sd_detected" is an unfiltered latch for "signal_detect" which will get set true by any chatter. The "wait(ACTIVE_SAMPLE_INTERVAL)" within "signal_detect_OK()" simply delays observation of the unfiltered "sd_detected" and does not eliminate false latching on chatter.
3.	Table 11-3 Upstarts v8 page 128	Line 30 states that the maximum gap (run length of no tones) in a speed signal is 6. Doesn't this preclude the sequence "1-0-0-0-0-0-1"? And the 6 samples actually only cover a 5 unit span, so any run length of 5 zeros in the speed code isn't supported.

Technical Issues (cont)

#	Reference	Description
4.	Table 11-3 Upstarts v8 page 128	Line 38 states that a start bit is guaranteed within 8 speed tone units after finding the gap. Based on issue #4 above, we may actually detect the "gap" during the 6 th speed tone bit position after the start bit (assuming the other side isn't sending the speed tone yet). Consequently, the next start bit might actually appear 9 or 10 speed tone units later. This isn't fatal, but will require another pass at finding the gap after the other end has sent a legit speed signal.

Technical Issues (cont)

#	Reference	Description
5.	Upstarts v8	<p>Figure 11-2 clearly specifies that when signaling speed, start bits occur with a 42.67 ms period. What period was intended between tones when not signaling speed? The current code generates slightly different periods depending on the circumstances:</p> <ul style="list-style-type: none"> ● when toning on a loose cable, period is given by $TONE_DURATION + DISCONNECTED_TONE_INTERVAL + ACTIVE_SAMPLE_INTERVAL = 43.37\text{ ms}$ ● when toning into a dc connected power-off node, the period is sometimes 43.37 ms. At other times it is $TONE_DURATION + DISCONNECTED_TONE_INTERVAL = 43.34\text{ ms}$. <p>It can also be $DISCONNECTED_TONE_INTERVAL + 2*(ACTIVE_SAMPLE_INTERVAL + TONE_DURATION) = 44.02\text{ ms}$</p>

C Code Syntax and Nits

#	Reference	Description
1.	Table 11-3 Upstarts v8	“bias_timer” is declared twice: once as an <i>int</i> globally on page 125, line 30 and once as a <i>timer</i> within “bias_status()” on page 126, line 10
2.	Table 11-3 Upstarts v8	Undeclared variables: receive_OK, Beta_mode, suspend, resume, fault, bport_active
3.	Table 11-3 Upstarts v8	Missing from “power_reset()”: pmd_tone_on, bport_active
4.	Table 11-3 Upstarts v8	On page 128, line 37 “TONE+GAP” should be “TONE_GAP”
5.	Table 11-3 Upstarts v8	On page 129, line 20 “listen_for_speed” should be “listening for speed”

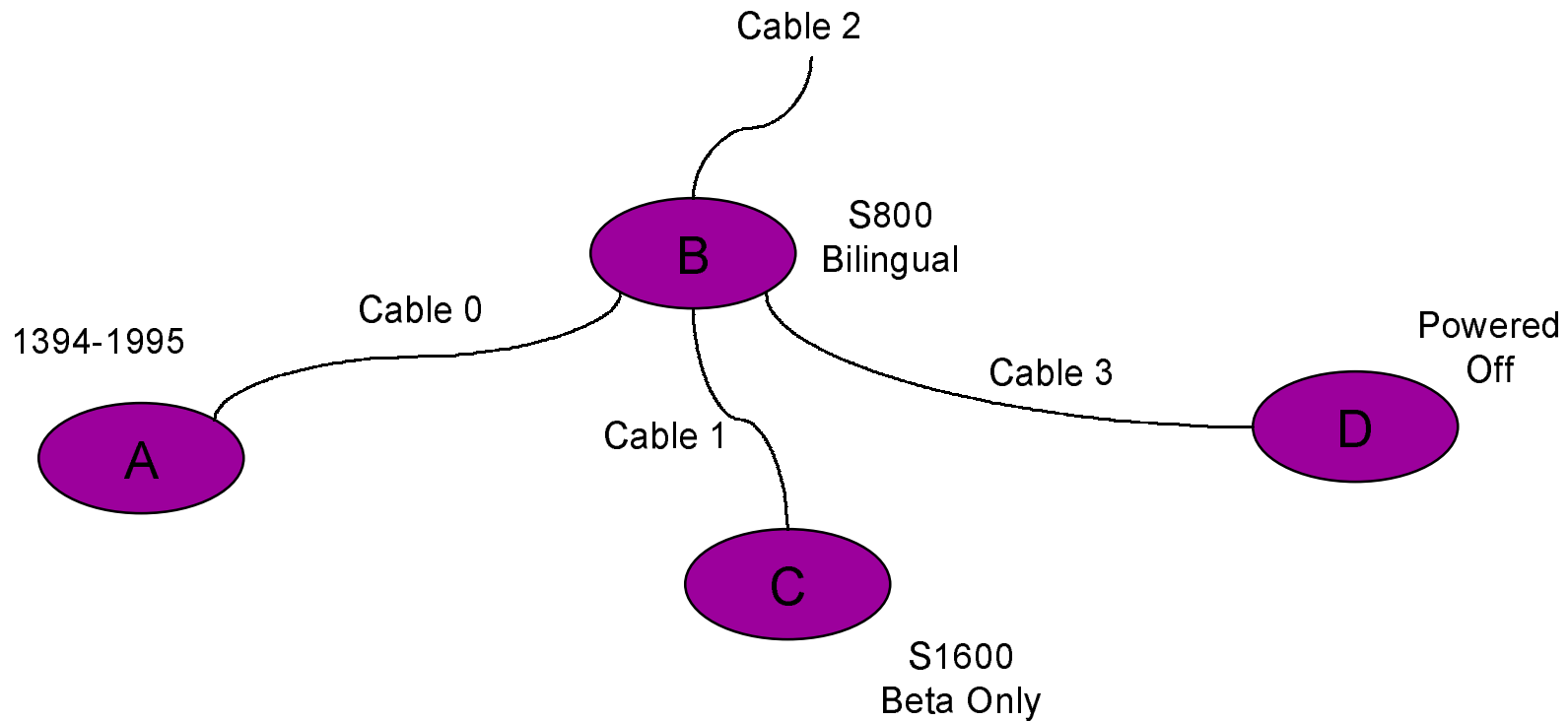
Editorial Suggestions

#	Reference	Description
1.	Table 11-1 Upstarts v8	Add units of "ms" to BIAS_HANDSHAKE_DELAY
2.	Table 11-3 Upstarts v8 page 127	Two latches are described for "connect_detect" and "signal detect". While functionally equivalent, C code style is different. Perhaps we should make it consistent?
3.	Table 11-3 Upstarts v8 page 128	The assignment to "count" on line 30 has units of integer "speed_units" while the assignment to count on line 37 is in units of TONE_DURATION. Confusion can be eliminated with appropriate comments.
4.	Table 11-3 Upstarts v8	Page 129, Line 20: mis-spelling of "autonomous"

Editorial Suggestions (cont)

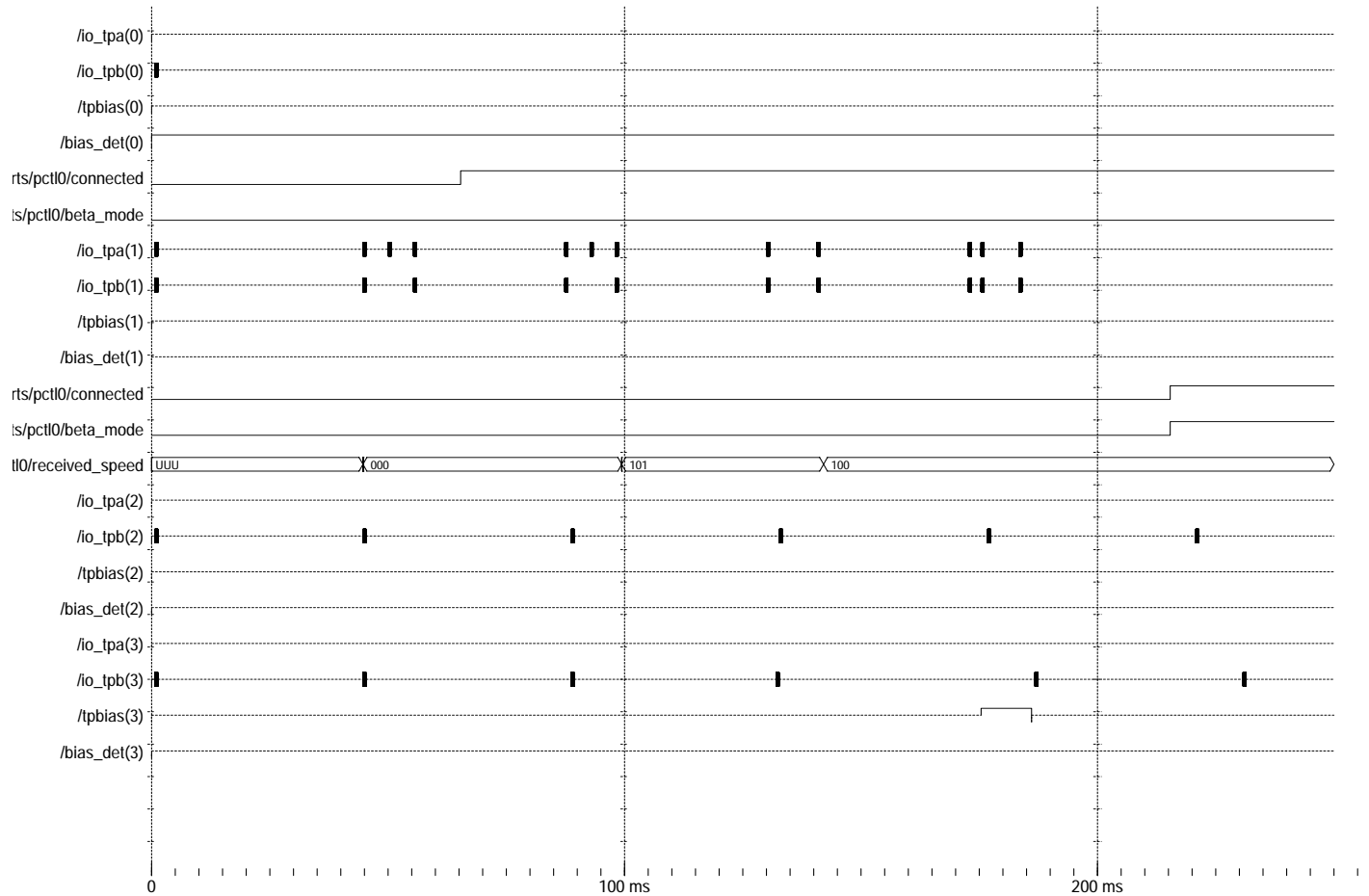
#	Reference	Description
5.	Table 11-3 Upstarts v8	Page 130, line 3: Should “set_ds” be “set_DS”?
6.	Table 11-3 Upstarts v8	Page 130, line 33: strike redundant parentheses (compare to line 1)

Test Configuration



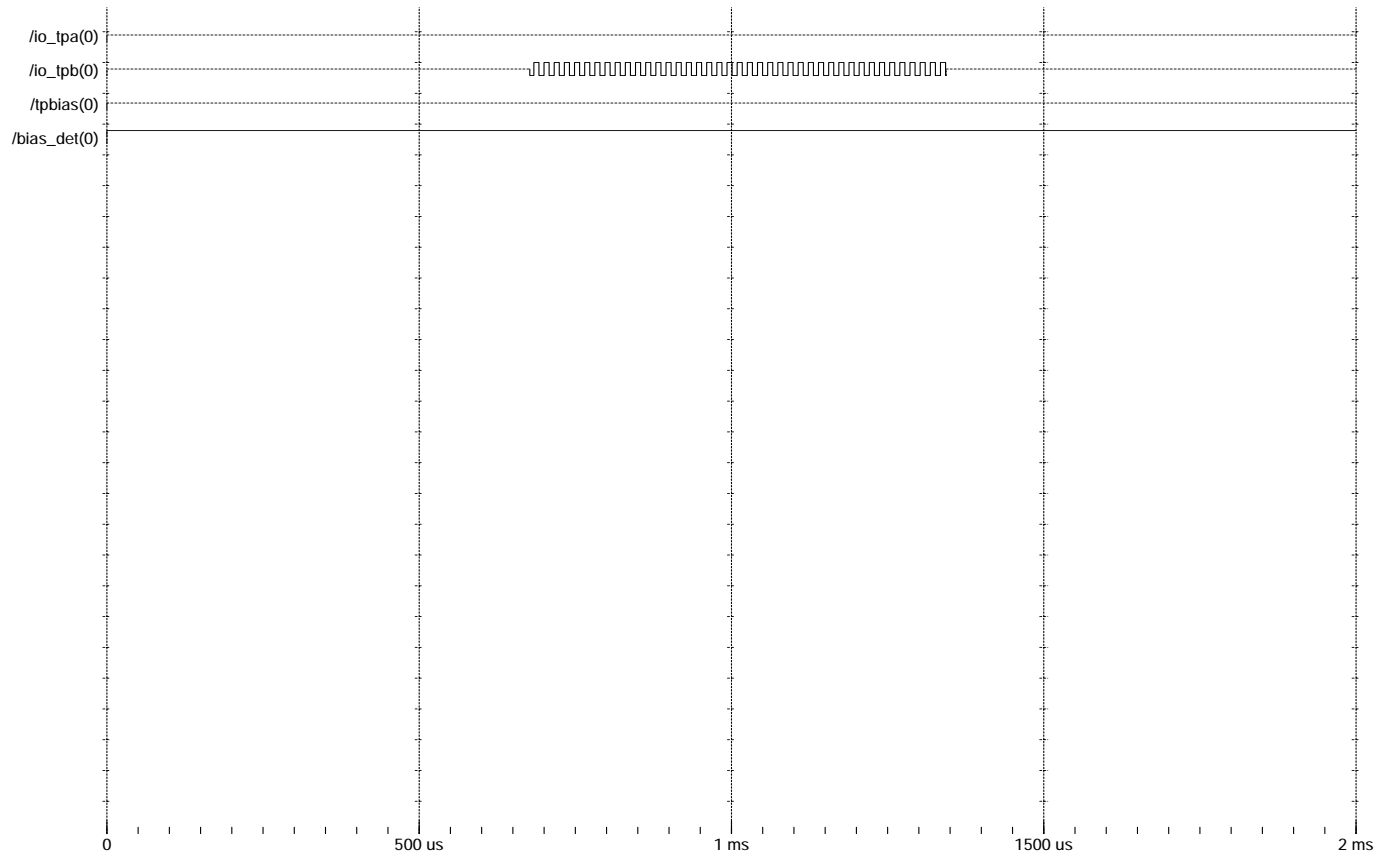
Nodes all stay in P0 State for duration of test

Upstarts Simulation



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Toning into TpBIAS



Entity:testbench Architecture:behavioral Date: Thu Sep 10 02:13:17 1998 Page 1