

P1394b Simulation Taskforce July Report

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Agenda

- send_speed contradicts Figure 11-3
- receive_speed_indication() exits early
- race between receive_speed_indication() and set_beta()
- Vague ponderings

Figure 11-3 vs send_speed()

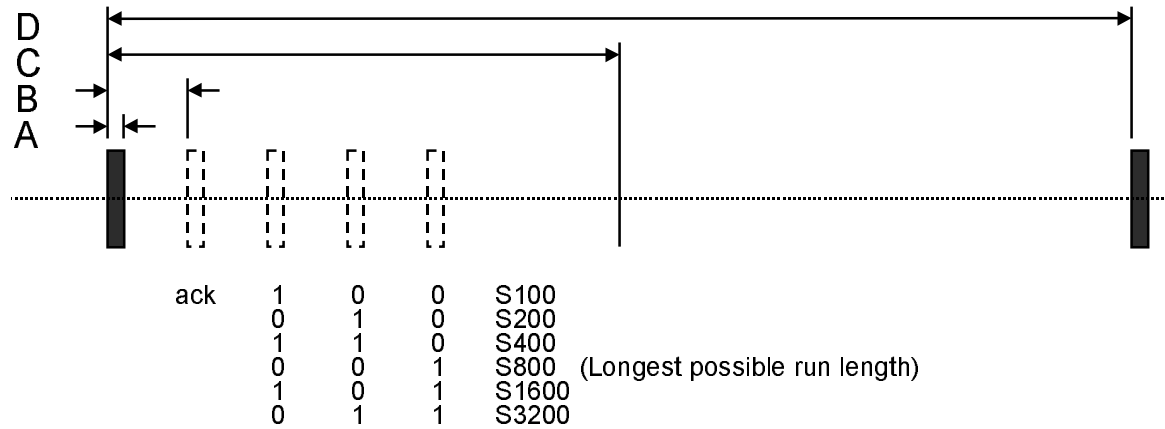


	Figure 11-3	send_speed()	Comment
A	666.67 us	TONE_DURATION = 666.67 us	✓
B	2.67 ms	(TONE_DURATION + SPEEDTONE_BIT_INTERVAL) = (5*TONE_DURATION) = 3.33 ms	x
C	21.33 ms	??	Why specified?
D	42.67 ms	[TONE_DURATION + 4 * (SPEEDTONE_BIT_INTERVAL + TONE_DURATION)] + [DISCONNECTED_TONE_INTERVAL - 4*(SPEEDTONE_BIT_INTERVAL + TONE_DURATION)] = [DISCONNECTED_TONE_INTERVAL + TONE_DURATION] = 43.33 ms	x

receive_speed_indication() exits before start bit seen?

- receive_speed_indication() interprets 13.38 ms of silence as a gap between speed exchange.
- receive_speed_indication() then waits at most 13.38 ms to detect the start bit of the next speed exchange
- If the speed pattern is 1-x-1-0-0, the idle time duration between the last “1” speed bit and the next start bit is 36.00 ms - 36.67 ms.
- For the speed pattern of 1-x-x-x-1, the idle time duration between the last “1” speed bit and the next start bit is 29.33 ms - 31.34 ms.
- Seems like routine will always exit after 26.76 ms.

receive_speed_indications() and set_beta() race?

- set_beta() starts the “autonomous speed listener going” and then automatically samples received_speed every 42.67 ms - 43.33 ms later.
- Assuming receive_speed_indications() is corrected to not exit early, it may take as long as 48.67 ms - 50.66 ms to return the first received_speed bit after listening_for_speed is set active.
- Depending on phasing of the nodes, it seems possible for set_beta to never see a valid speed sample or for it to sample an incomplete received_speed (which isn't written atomically).

Ponderings

- receive_speed_indication() doesn't really attempt to center the sampling points
- hysteresis on sampling vs transmitting of speed. Likely to be a problem with clock differences, etc. C code needs a different attack?

Next Victims

- Scrambler/Coder (Target Portland)