USB 3.1 ENGINEERING CHANGE NOTICE FORM

Title: USB3.1 SCD Clarifications
Applied to: USB3.1

Brief description of the functional changes:
Clarifications on how back to back or consecutive SCD1/SCD2 shall be transmitted. Background: the transmission of SCD1/SCD2 in Polling.LFPS must meet the SS requirement to present as continuous Polling.LFPS. This means an SSP port in Polling.LFPS must transmit SCD1/SCD2 consecutively. In other words, consecutive (or back to back) SCD1s must be transmitted as SCD1-SCD1-…SCD1 without end of SCD in between SCD1s. The potential confusion in the spec arises in Section 6.9.4, where Figure 6-33 only illustrates an example of SCD1/SCD2 transmission with one SCD1 followed by end of SCD. The lack of examples for back to back SCD1/SCD2 transmission results in some implementation interpreting SCD1/SCD2 transmission in Polling.LFPS/Polling.LFPSPlus as "SCD1-end of SCD-SCD1-end of SCD1-…". This is a violation to the SS operation because of the non-continuous Polling.LFPS transmission.

Benefits as a result of the changes:
Avoid implementation confusion of SCD1/SCD2 transmission. 1. Add examples in Figure 6-33 back to back SCD1 or SCD2 transmission 2. Add examples in Figure 6-33 back to back SCD1 and SCD2 transmission when transitioning from Polling.LFPS to Polling.LFPSPlus

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
NA

An analysis of the hardware implications:
NA

An analysis of the software implications:
NA

An analysis of the compliance testing implications:
NA

Actual Change

From Section 6.9.4.2

SCD1 is defined as “0010” and SCD2 is defined as “1101”. The transmission of SCD1/SCD2 shall be based on the following.

- The transmission shall be LSb first, and consecutive SCD1/SCD2 shall be transmitted back to back.
- The transmission shall be completed with an extra tBurst followed by electrical idle (EI) of at least 2x the maximum allowable tRepeat value.

To Section 6.9.4.2

SCD1 is defined as “0010” and SCD2 is defined as “1101”. The transmission of SCD1/SCD2 shall be based on the following.

- The transmission shall be LSb first, and consecutive SCD1/SCD2 shall be transmitted back to back. Shown in Figure 6-33(a) is an example of consecutive SCD1 transmission.
- The transmission shall be completed with an extra tBurst followed by electrical idle (EI) of at least 2x the maximum allowable tRepeat value as shown in Figure 6-33(b).

From Figure 6-33.

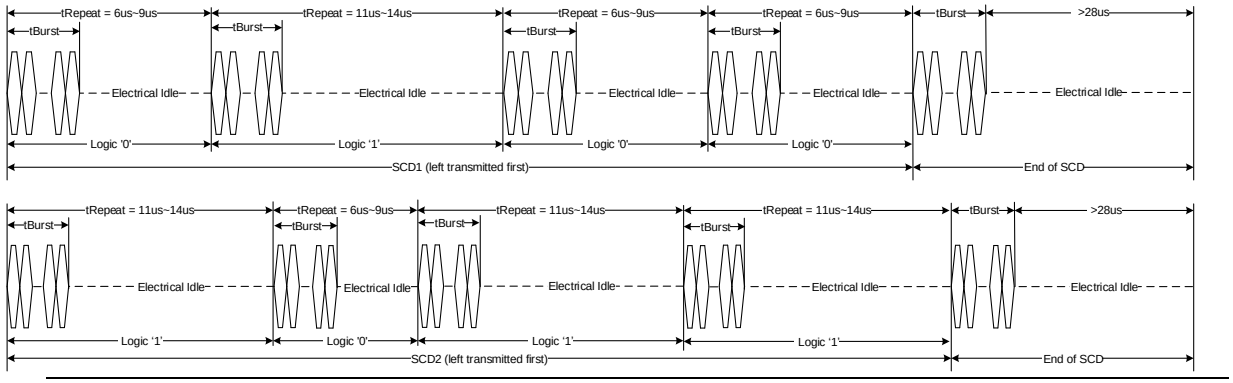
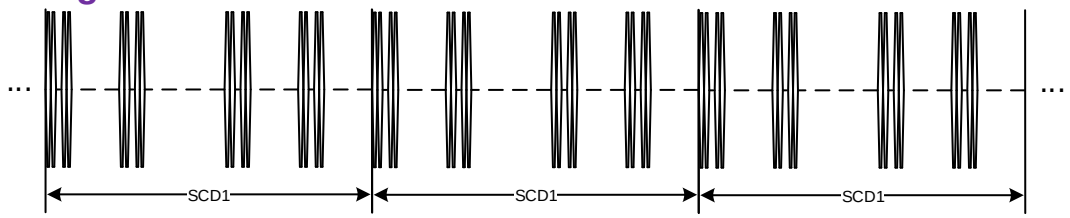
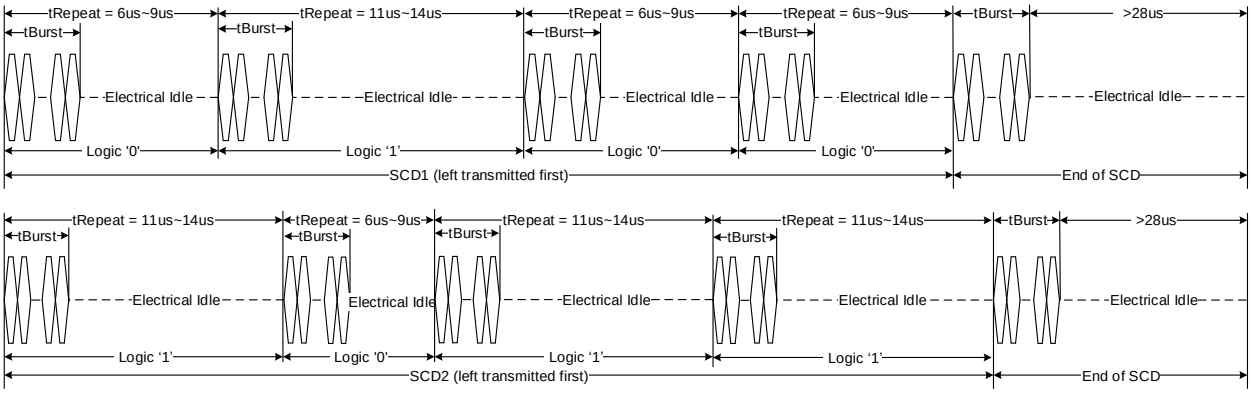


Figure Error! No text of specified style in document.**-1. SCD1/SCD2 transmission**

To Figure 6-33:



(a). Illustration of back to back (consecutive) SCD1 transmission



(b). Illustrations of end of SCD1 or SCD2 transmission

Figure Error! No text of specified style in document.**-2. Illustrations of SCD1/SCD2 transmission**