

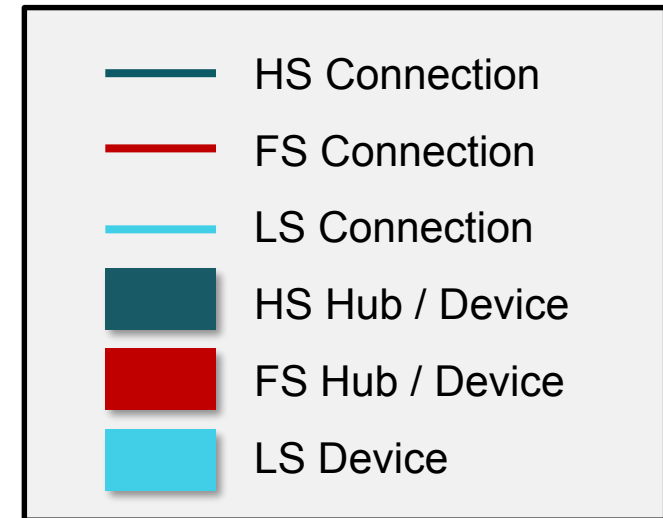
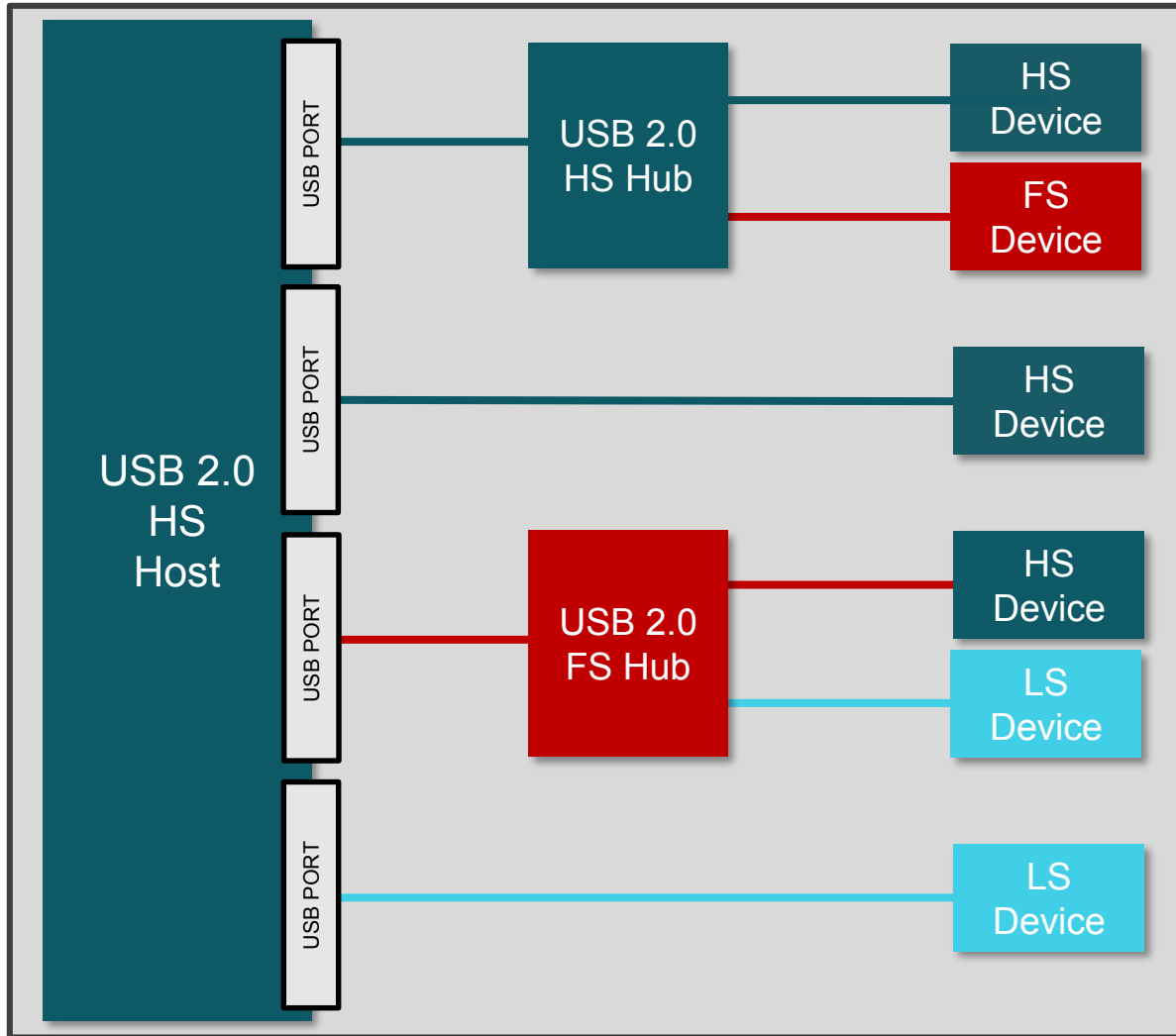
What is the USB 2.0 High-speed Detection Handshake?

TI Precision Labs – USB

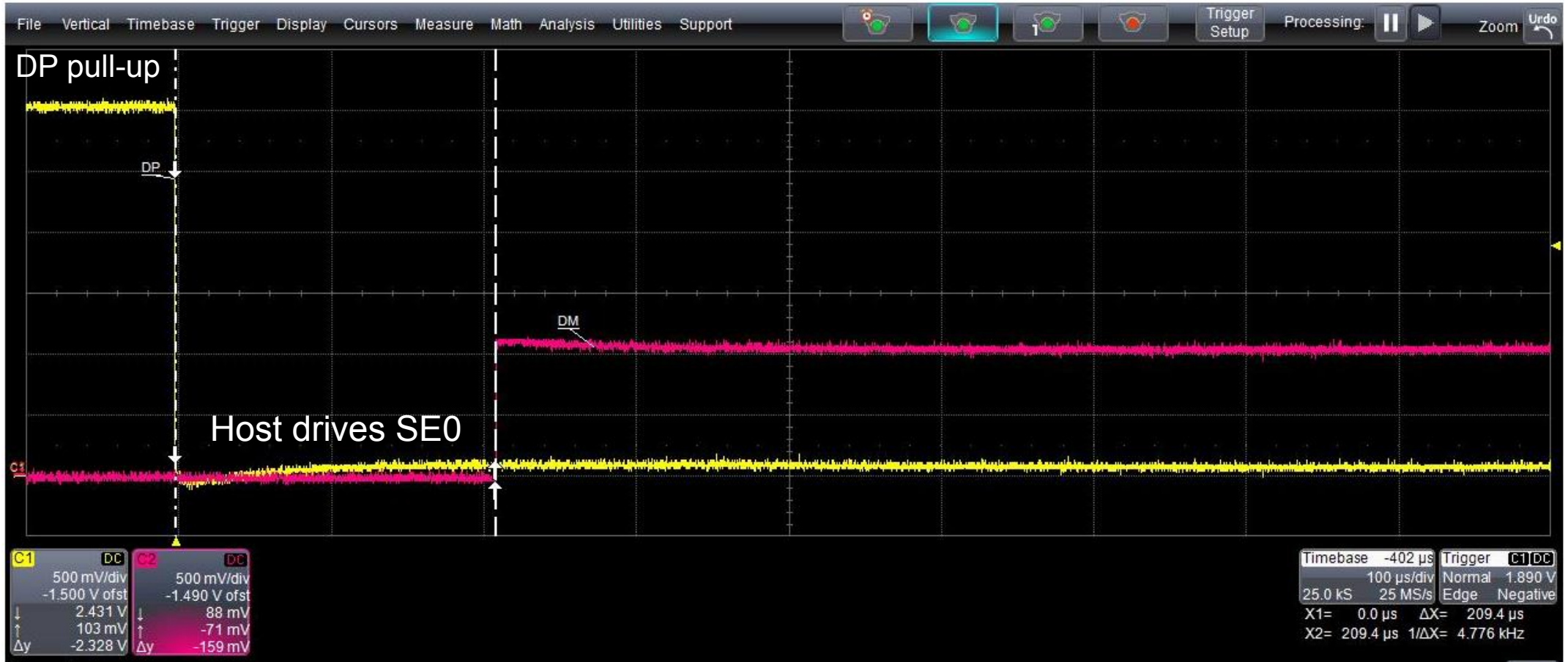
Prepared by Julie Nirchi

Presented by Nicholas Malone

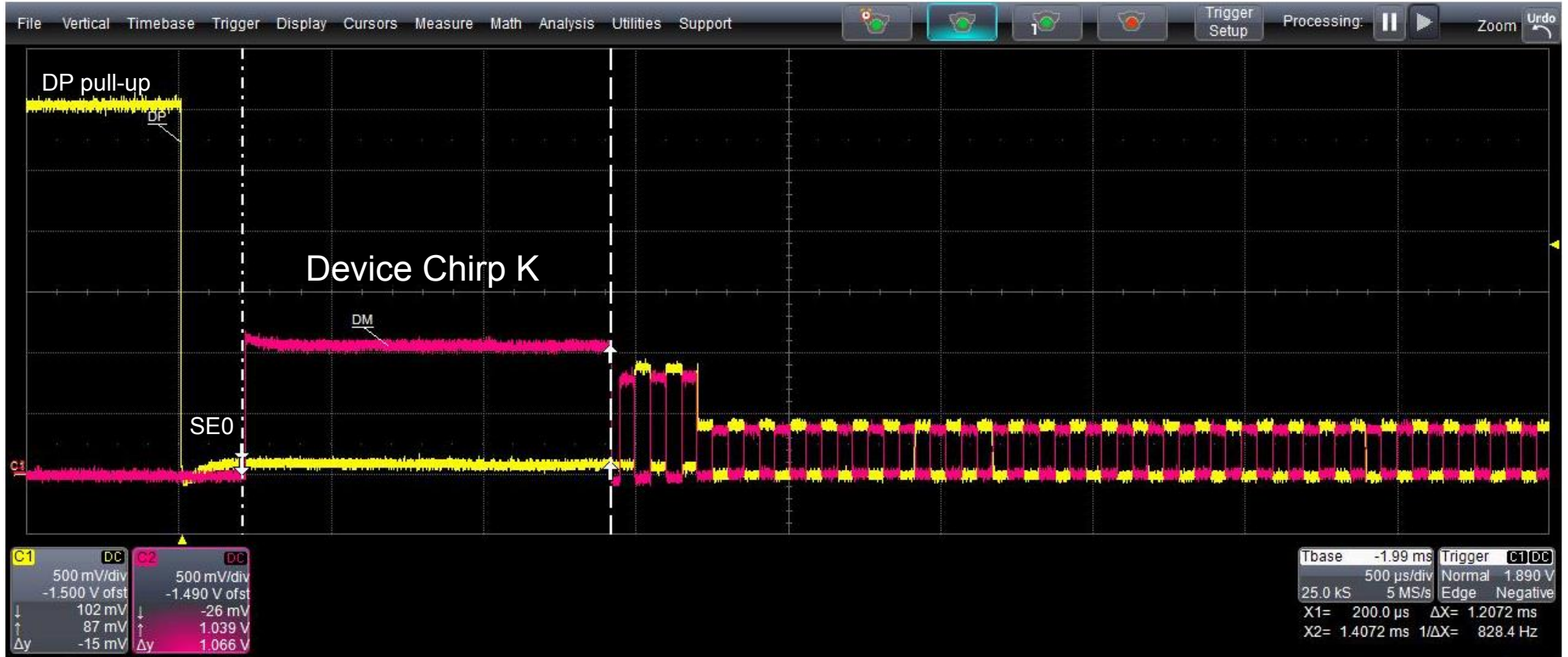
USB 2.0 ecosystem



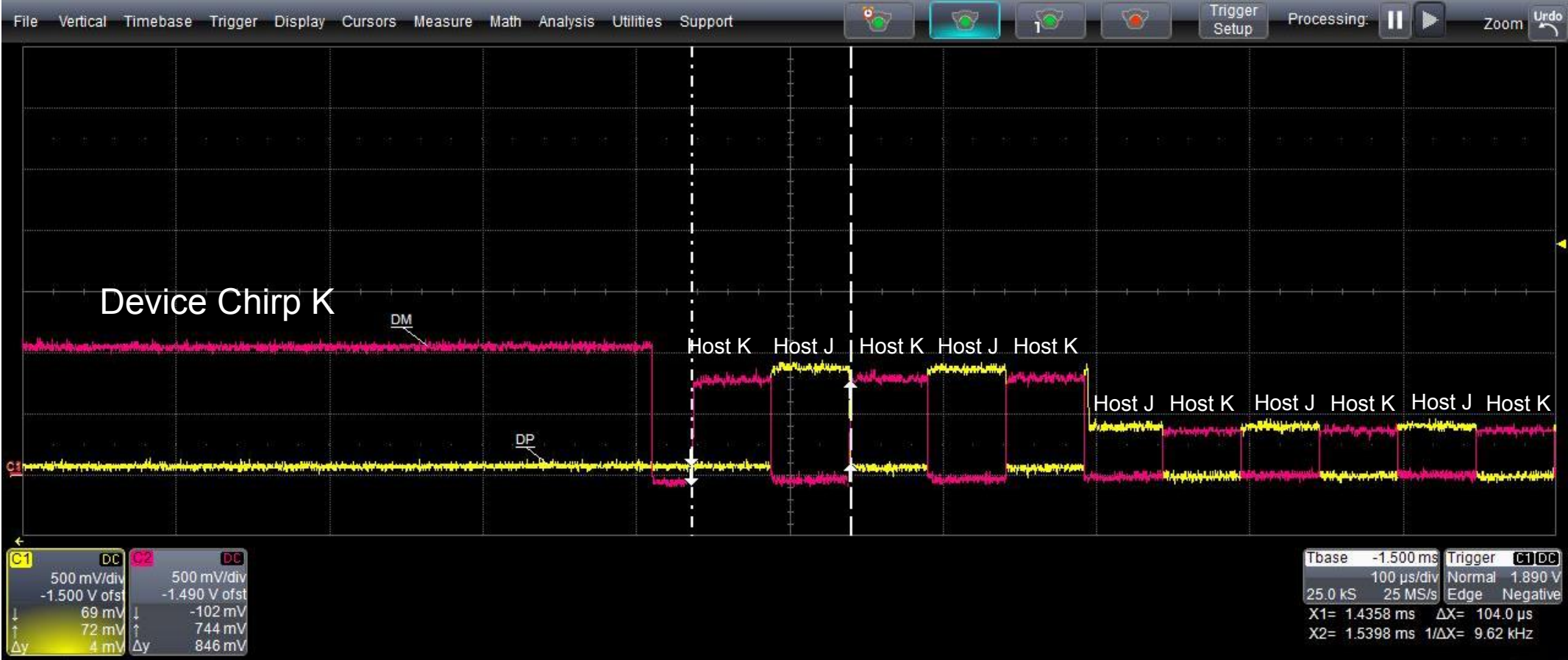
Host checks device speed and drives SE0



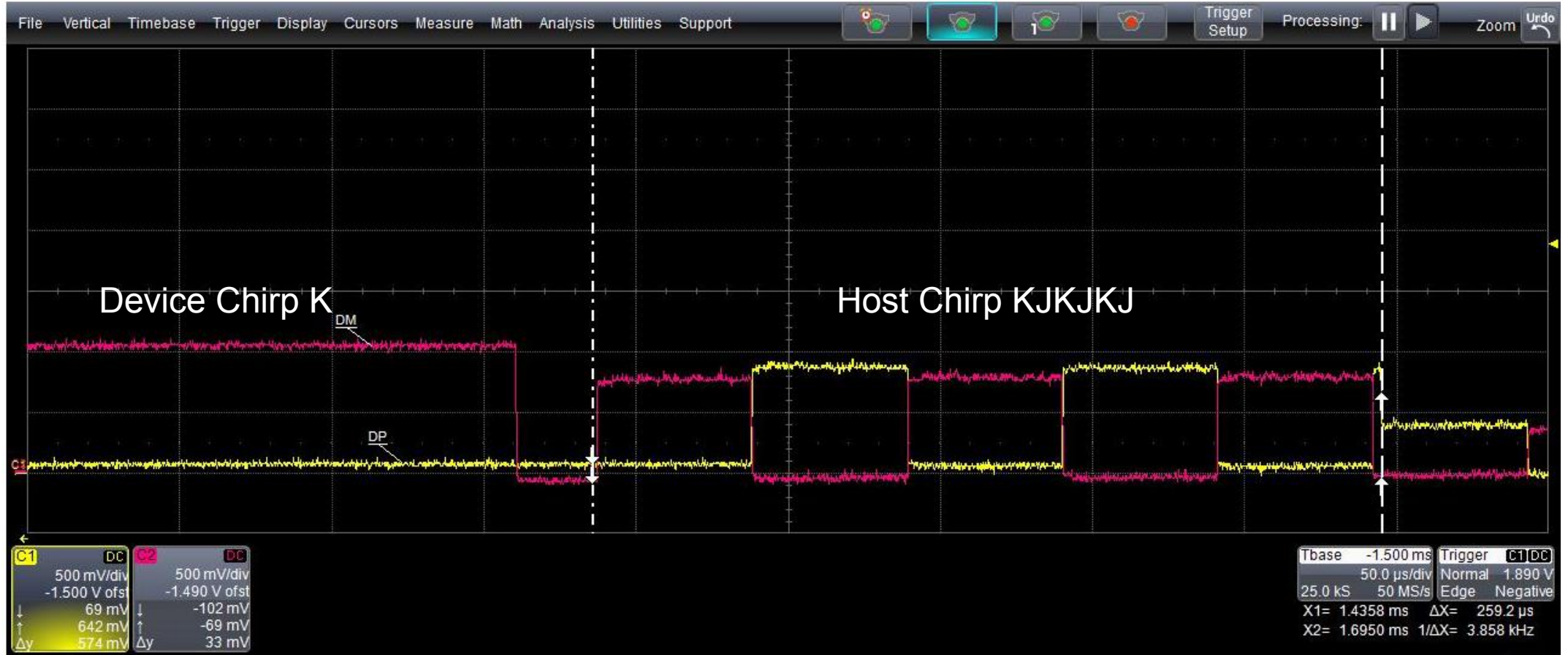
Device detects reset and sends chirp K



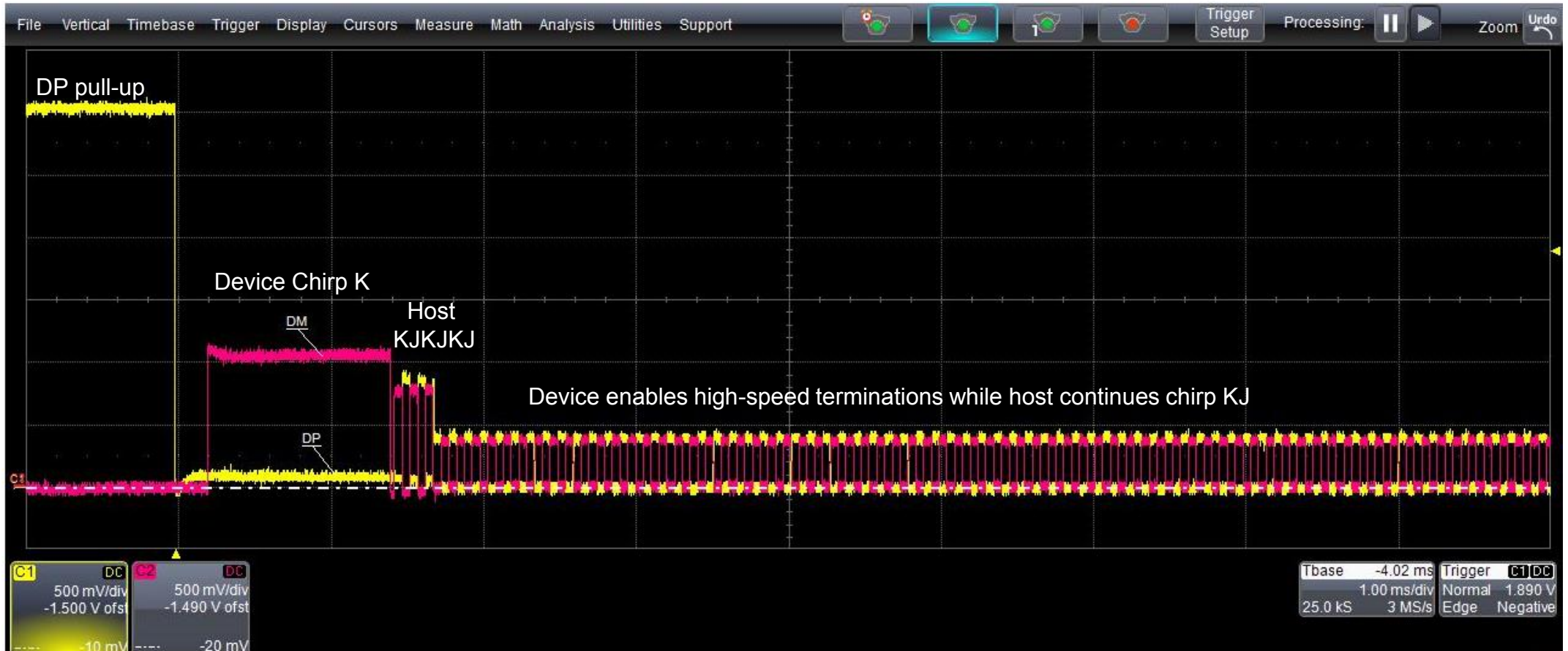
Host sends chirp KJ



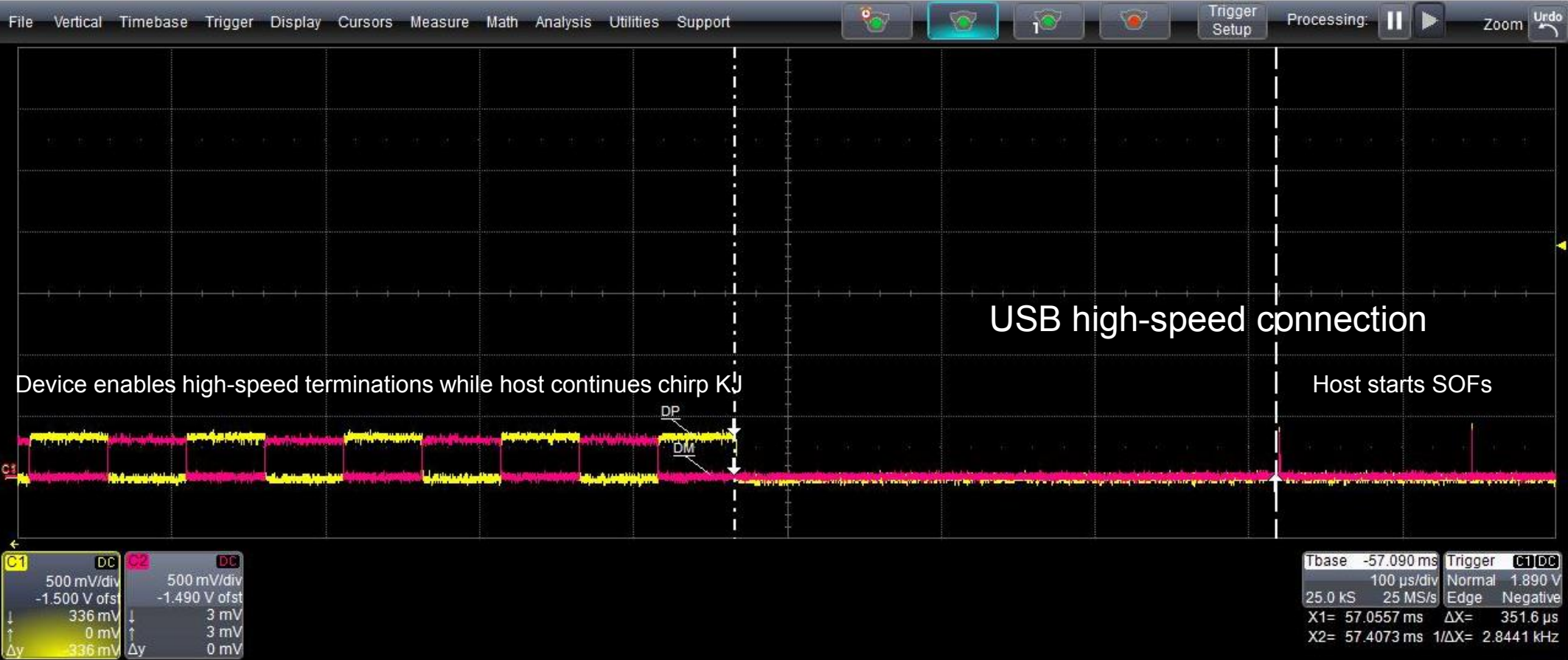
Device detects host chirp KJKJKJ



Device enables high-speed terminations

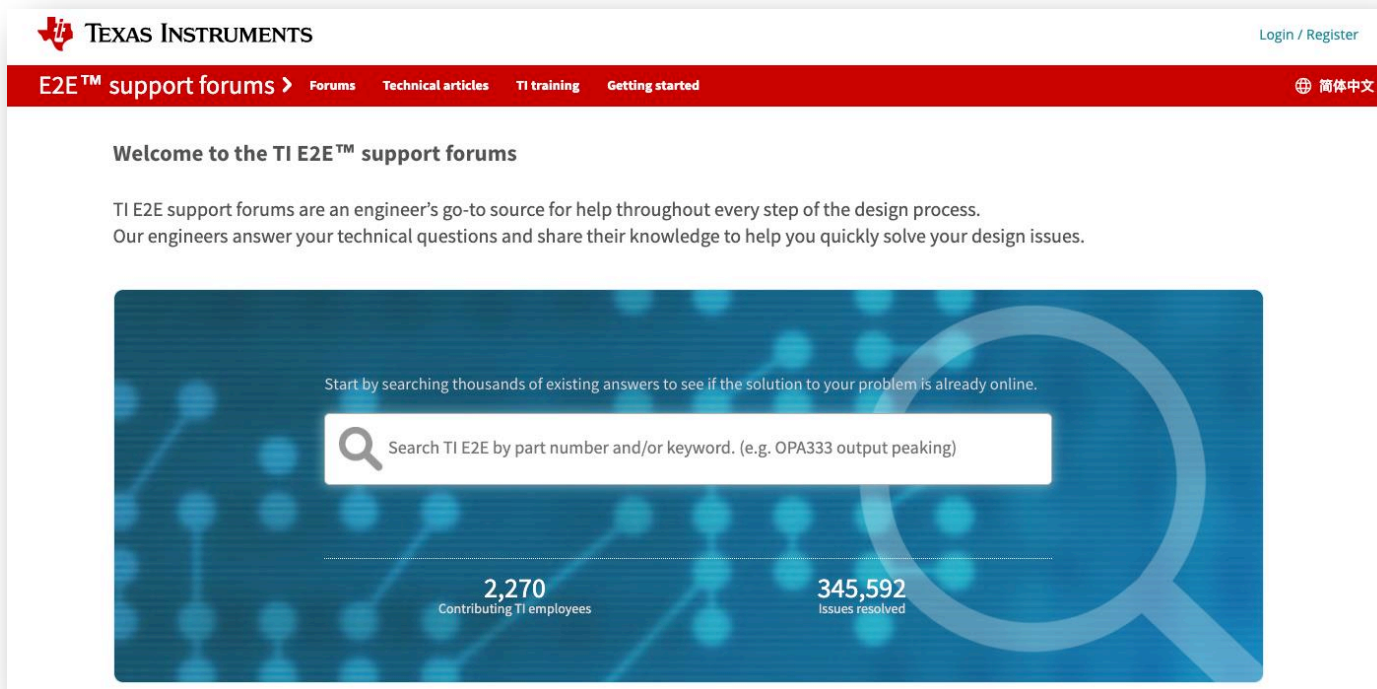


Host starts high-speed microframe SOFs.



Thank you

- [TI Precision Labs - What is an Eye Diagram?](#)
- [TI Precision Labs – Layout Basics for USB Designs](#)



The screenshot shows the homepage of the TI E2E support forums. At the top left is the Texas Instruments logo and the text "TEXAS INSTRUMENTS". At the top right are links for "Login / Register". Below this is a red navigation bar with "E2E™ support forums >" followed by "Forums", "Technical articles", "TI training", and "Getting started". On the far right of the red bar is a globe icon and the text "简体中文".

The main content area has a white background. It starts with the heading "Welcome to the TI E2E™ support forums". Below this is a paragraph: "TI E2E support forums are an engineer's go-to source for help throughout every step of the design process. Our engineers answer your technical questions and share their knowledge to help you quickly solve your design issues."

Below the paragraph is a large blue banner with a network diagram background and a large magnifying glass icon. The banner contains the text: "Start by searching thousands of existing answers to see if the solution to your problem is already online." Below this text is a white search input field with a magnifying glass icon and the placeholder text: "Search TI E2E by part number and/or keyword. (e.g. OPA333 output peaking)".

At the bottom of the banner, there are two statistics: "2,270 Contributing TI employees" and "345,592 Issues resolved".



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Short quiz

True or false: USB 2.0 high-speed devices attach first at full-speed.

Short quiz



True or false: USB 2.0 high-speed devices attach first at full-speed.

True. USB 2.0 high-speed devices attach first at full-speed, with a DP pull-up enabled.

Short quiz

True or false: USB 2.0 low-speed devices go through the high-speed detection handshake.

Short quiz

FALSE

True or false: USB 2.0 low-speed devices go through the high-speed detection handshake.

False. USB 2.0 low-speed devices can only connect at low-speed and do not participate in a high-speed detection handshake.

Short quiz

True or false: all chirps in the high-speed detection handshake come from the host.

Short quiz

FALSE

True or false: all chirps in the high-speed detection handshake come from the host.

False. The first chirp K in the high-speed detection handshake comes from the device.

Short quiz

True or false: a USB high-speed device connected to a USB full-speed port will not enter high-speed mode.

Short quiz



True or false: a USB high-speed device connected to a USB full-speed port will not enter high-speed mode.

True. If either the host or the device is not high-speed capable, the high-speed detection handshake will fail and the connection will operate at full-speed.