

### 1003: Intermittent Fault

Occasionally cable troubleshooting involves detecting and localizing transient or intermittent faults, such as a twisted pair cable with frayed insulation that briefly shorts its conductors when mechanically disturbed or a coaxial connector that reflects an open when shaken. The CT100B's Envelope Plot mode simplifies intermittent fault characterization.

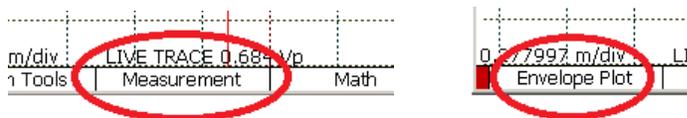
This application note will walk you through finding an intermittent fault in a cable that we know has a loose connector.

#### Set Screen Resolution

After your cable has been connected to the CT100B, we'll set the scanning resolution to *Screen* and choose a Cable Length, set the Vp to the correct value, and use Autofit.<sup>1</sup>



Now select the Measurement menu item, and then press the Envelope Plot menu item.

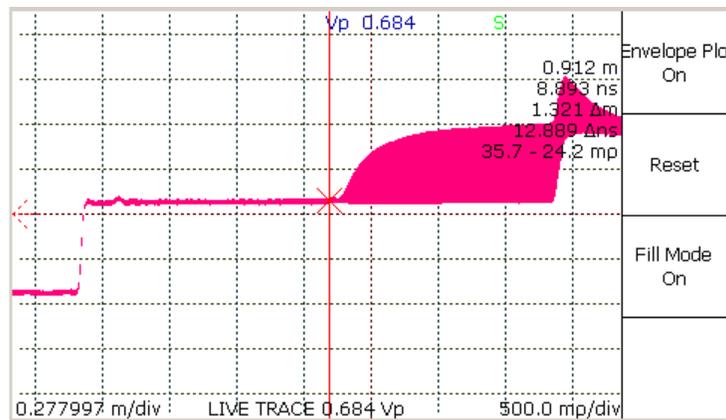


<sup>1</sup> These steps were all covered in earlier CT100B App. Notes, although we used Normal resolution instead of Screen in those examples.

Press the menu item labeled Envelope Plot Off. It will turn to Envelope Plot On. Make sure the Fill Mode is also On. This fill solidly fill with color the area between the highest and lowest measured impedance at any horizontal location in the trace.



Now you can move or wiggle the cable to see if the connector is the cause of the intermittent fault. Sometimes this isn't possible, but you can just let the CT100B continue to record for long periods of time while waiting for the fault to occur.



Yes, the connector appears to be loose. What we can see in the plot is that the cable up to the connector is quite stable, but that to the right of the connector the signal has varied between normal operation and a complete open connection.

On a long cable, or for very subtle flaws, you can zoom in to the area by positioning a CURSOR and using the HORIZONTAL SCALE and VERTICAL SCALE knobs to emphasize the area. If you want to zoom in on a place you've just run the Envelope Plot on, you turn Envelope Plot off, press the BLUE button to back out of the menus, adjust your scales, and then run a new Envelope Plot.