What technique does the SVA1000X/SSA3000X-R use for the Distance-To-Fault function?

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The SIGLENT SVA1000X and SSA3000X-R series of spectrum analyzers have a Distance-To-Fault feature that is useful for determining the physical location of breaks, dielectric degradation, and other issues in cabling, connectors, and adapters.

This technique utilizes a swept signal source to produce an output signal that covers a known frequency range. As the impedance of the cable/Device-Under-Test (DUT) changes, some of the swept energy is reflected back to the source. This reflected energy is measured and an inverse FFT (IFFT) of the data is used with the propagation velocity of the cable to calculate the physical distance from the source to the impedance difference.

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