Power over the MDI

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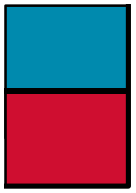
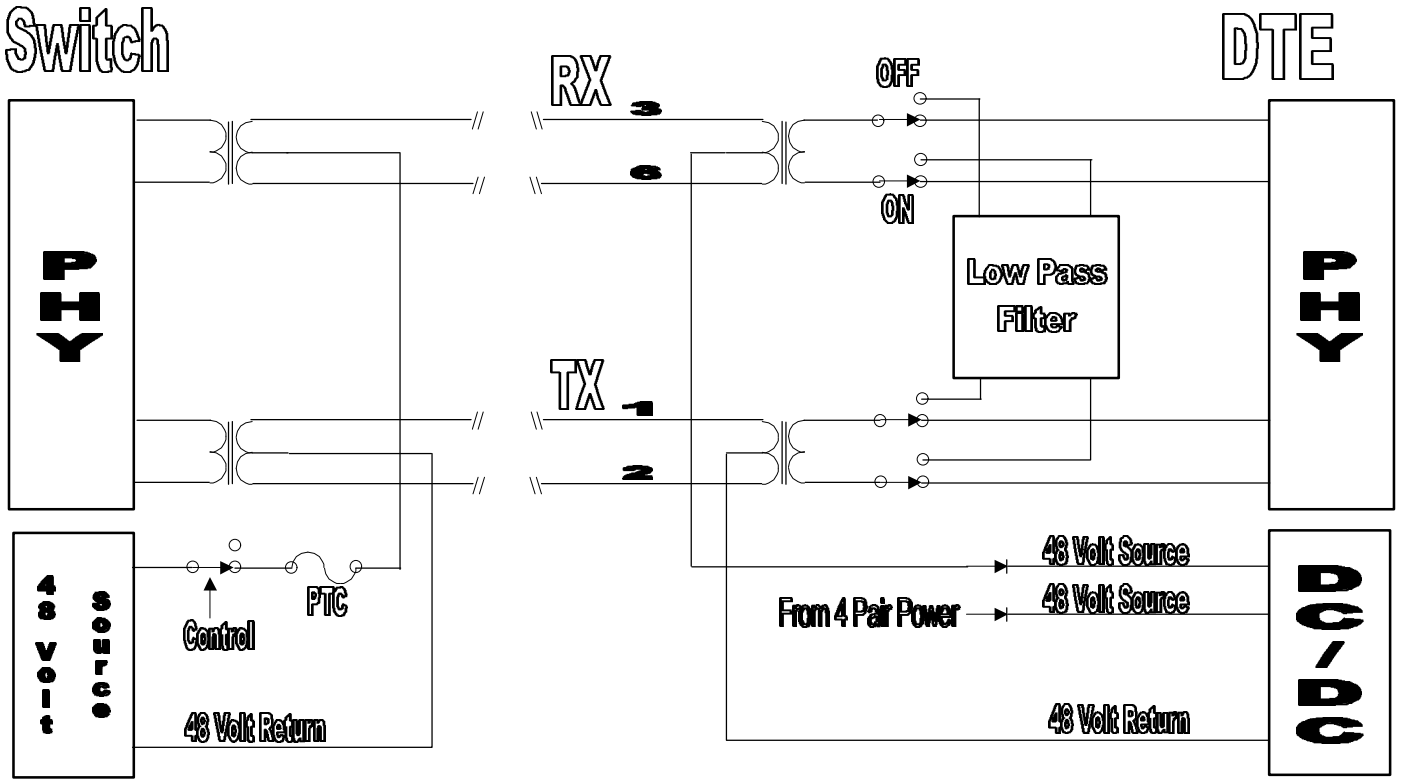


2 Pair Operation

- Overview
- Phone Discovery
- Power Delivery
- Signal Quality Impact

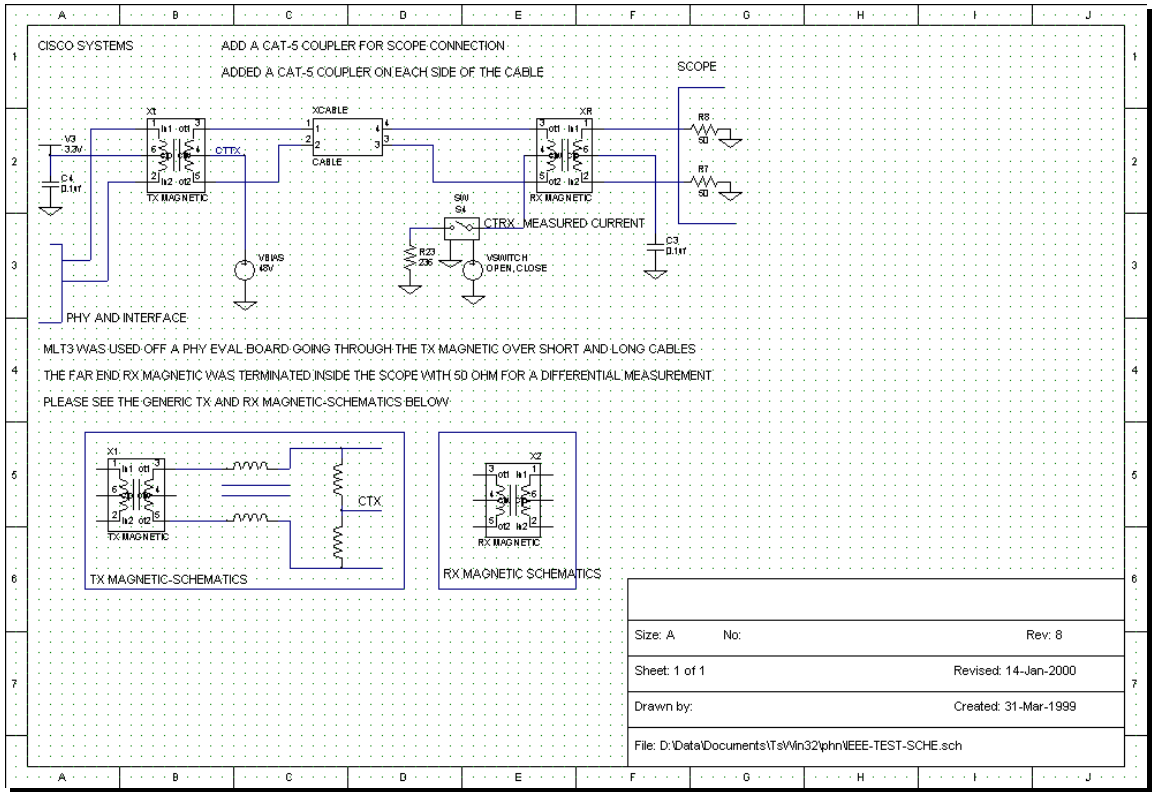
2 Pair Overview



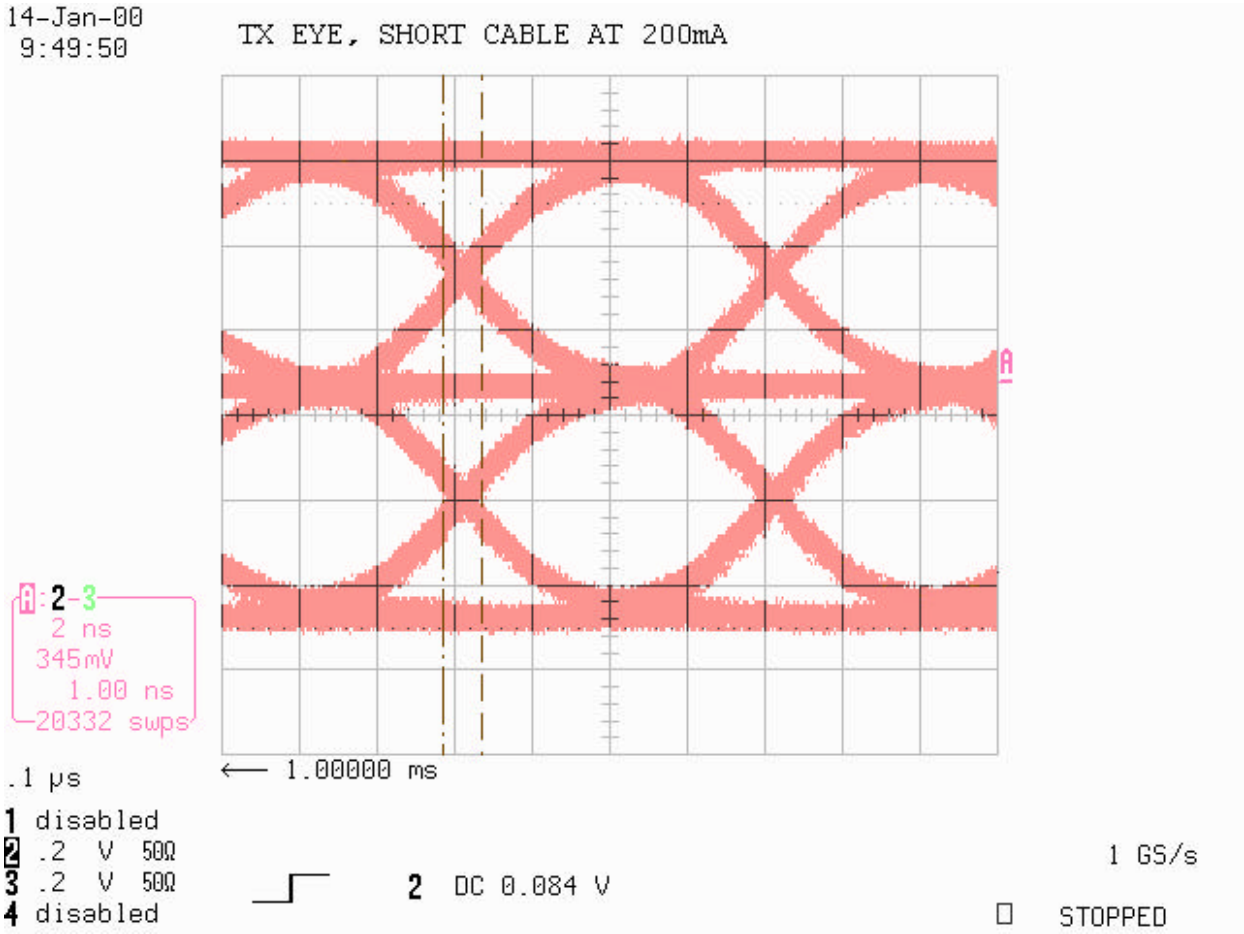
Phone Discovery

- Using Discovery Tone in Loopback without power (see “DTE Power via MDI” by Vafa Rakshani of Broadcom on 11/8/99)
- Each Port on Switch Individually Controlled
- Power from Switch up to 8-10 Watts @ 48V (see “LAN Magnetics operating under DC Bias Conditions” by Henry Heinricks of Pulse Engineering on 11/8/99)

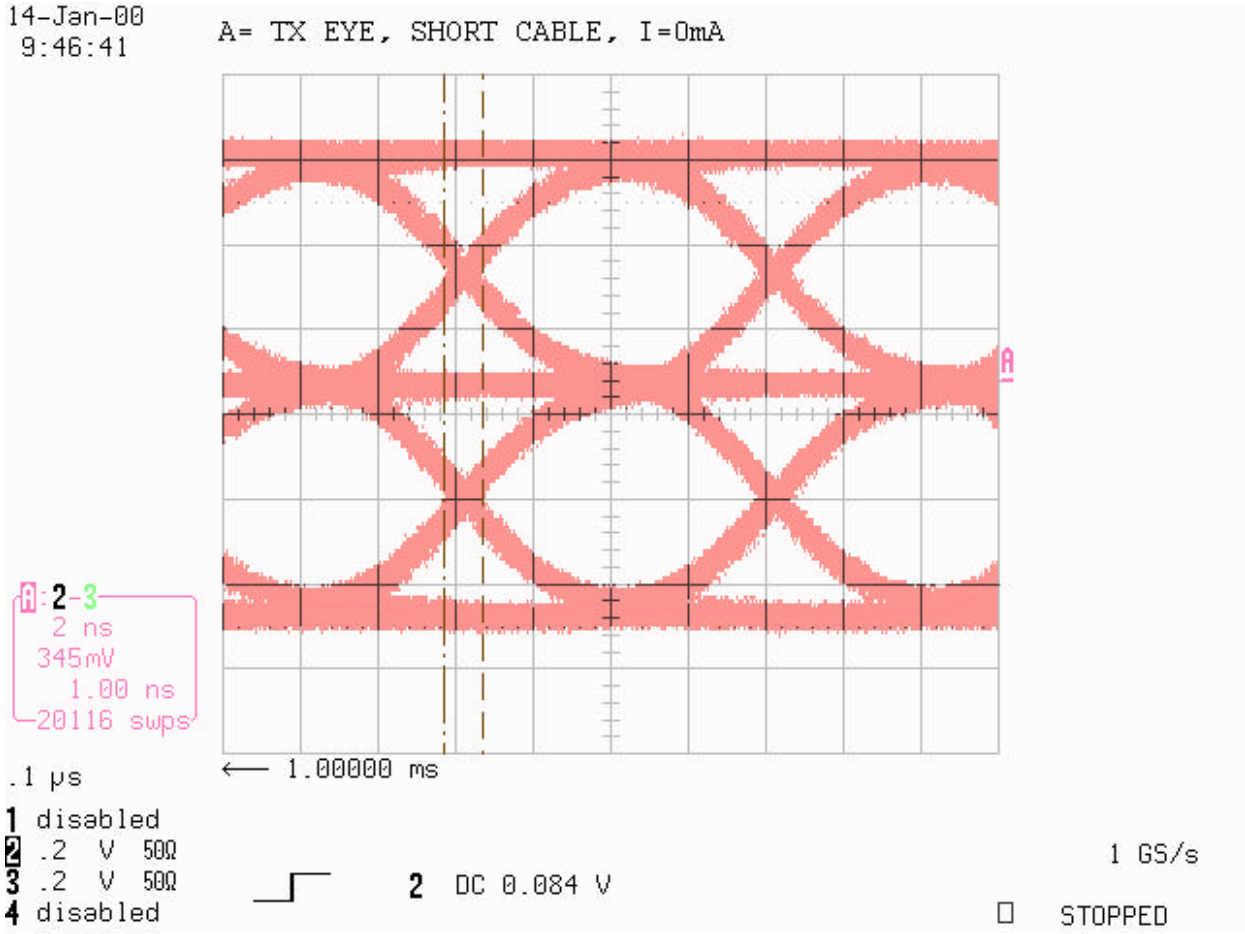
Signal Quality Measurements



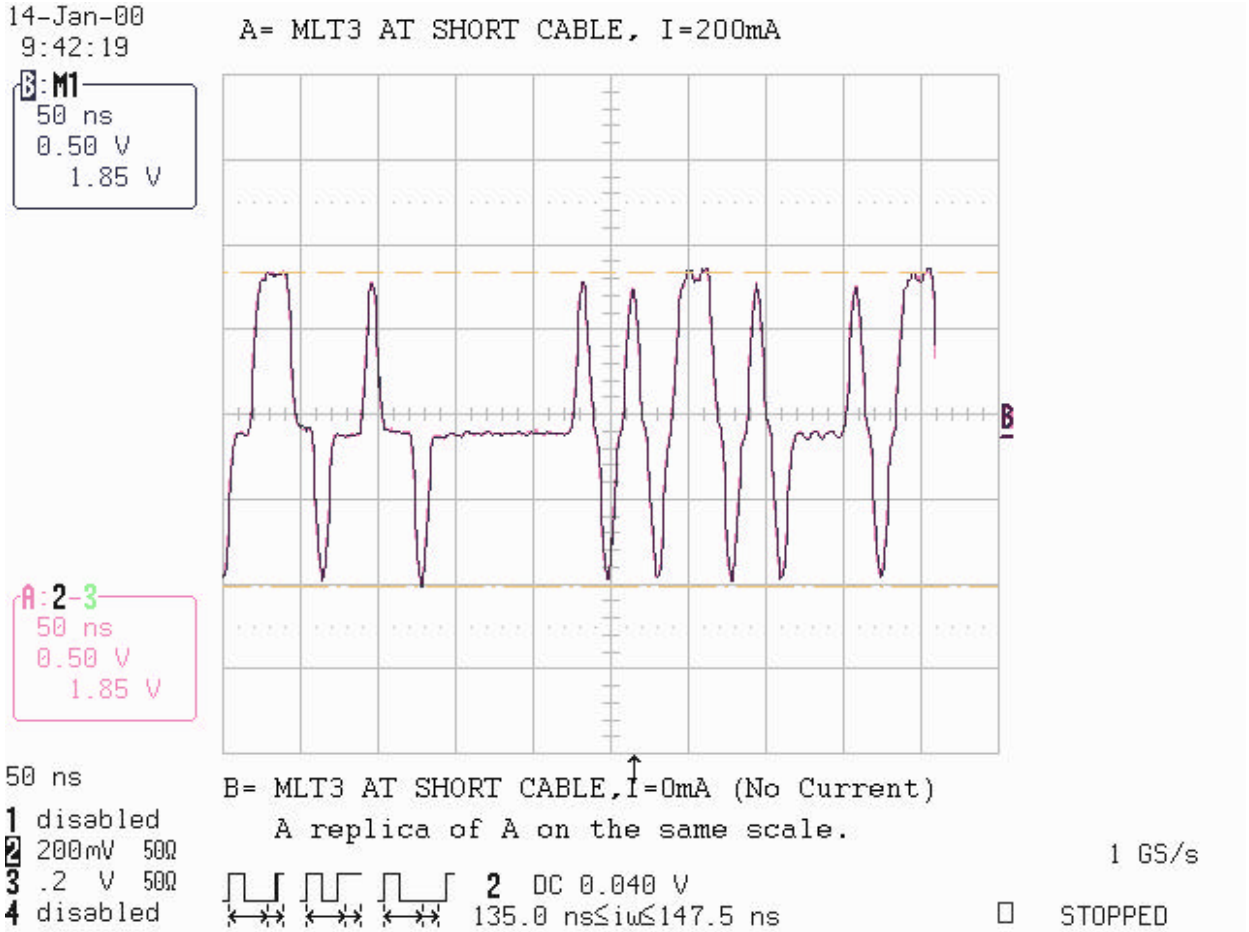
Signal Quality Measurements



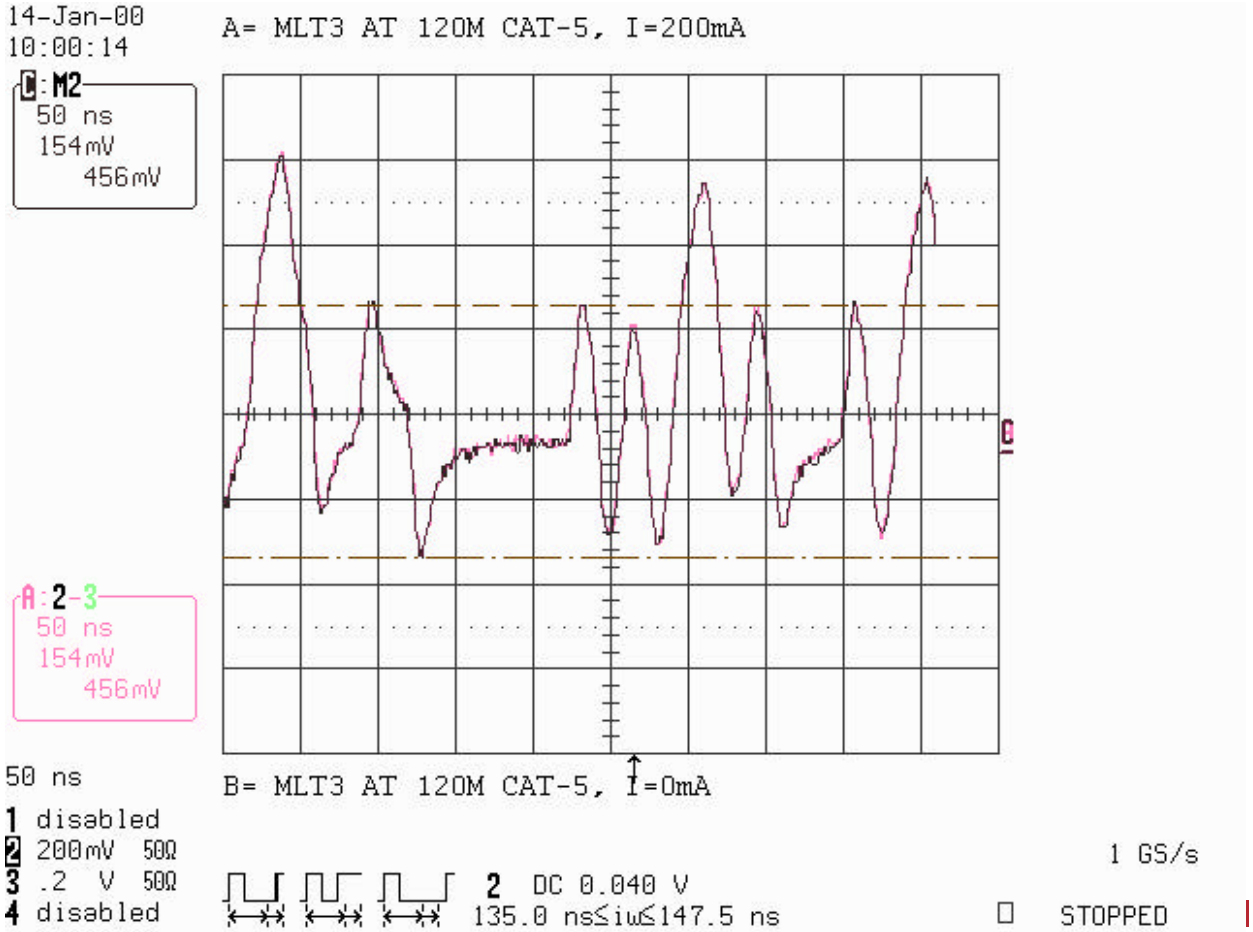
Signal Quality Measurements



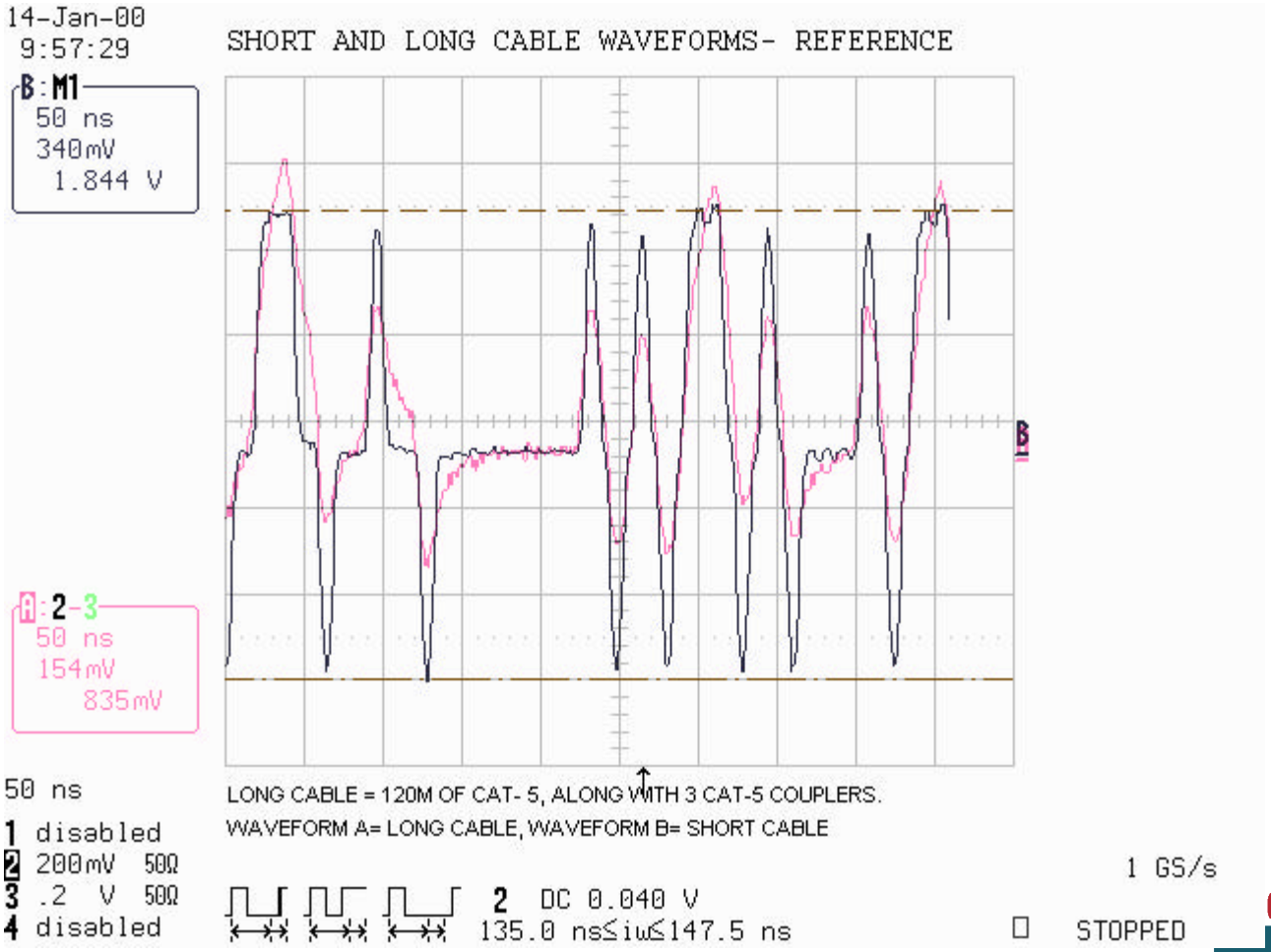
Signal Quality Measurements



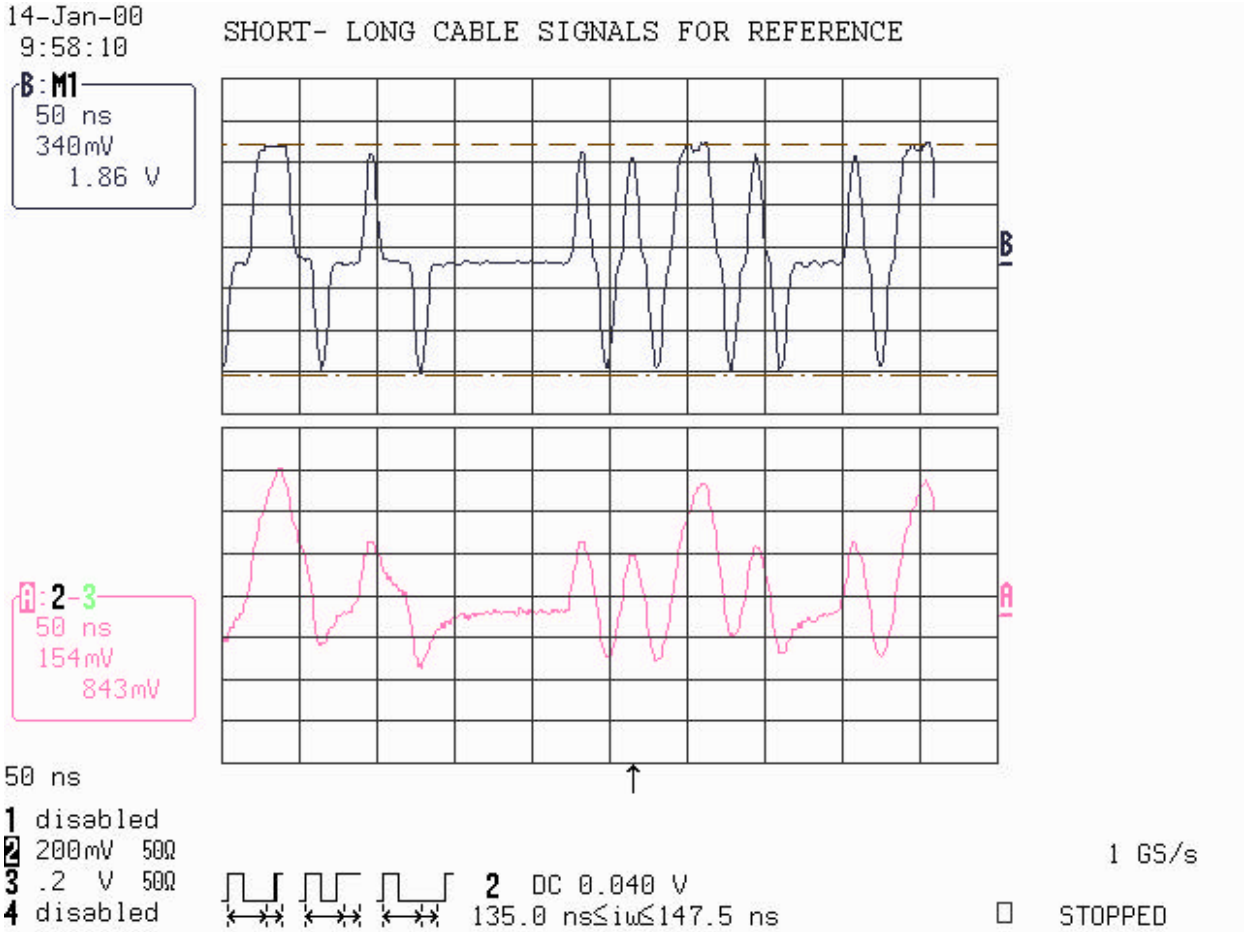
Signal Quality Measurements



Signal Quality Measurements



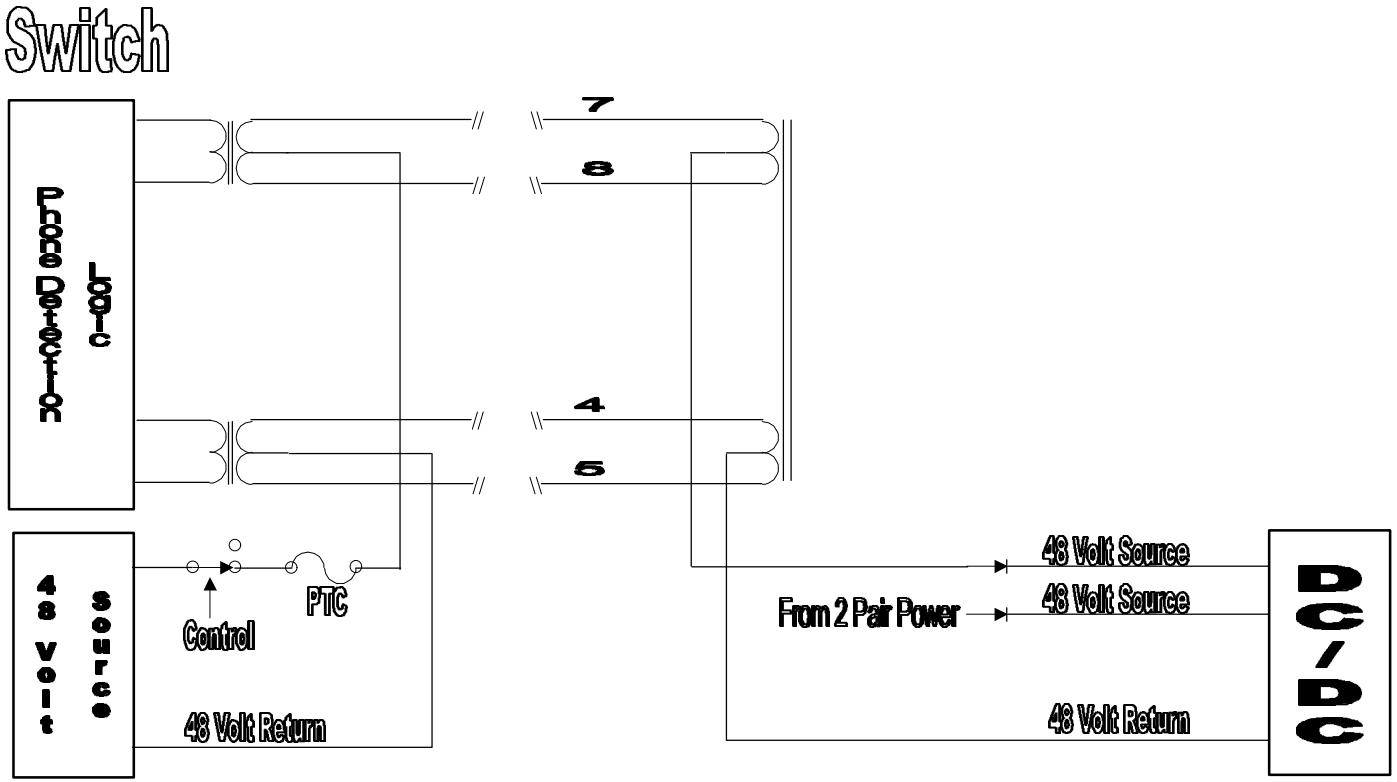
Signal Quality Measurements



Mid Span (4 Pair) Operation

- Overview
- Phone Discovery
- Power Delivery

Mid Span (4 Pair) Overview



Phone Discovery/Power Delivery

- Done with 300 Khz Tone to detect connect and disconnect
- Detection and Power done with Pairs 3 and 4
- Power from Switch up to 8-10 Watts at 48 Volts

Combined Interface in DTE

- Include Both Interfaces in the DTE
- Allows for 2 pair Operation on Legacy Wiring. We think there are a significant number of installations with this limitation.
- Allows for mid span powering with 4 pair wiring without disturbing the signal quality from the switch to the DTE.
- EMI Tested and Verified to meet FCC Class B limits at the DTE and the Switch