

# Ethernet-APL Test Guide

**Test Type (Data or Power):** Power

**Test Name:** TL.3.3 Polarity Sensitivity

**Purpose/Description:** To verify that a Trunk Power Load is reverse polarity protected if it is polarity sensitive or that it operates normally regardless of polarity if it is polarity insensitive. Mode A + / - and Mode B - / + .

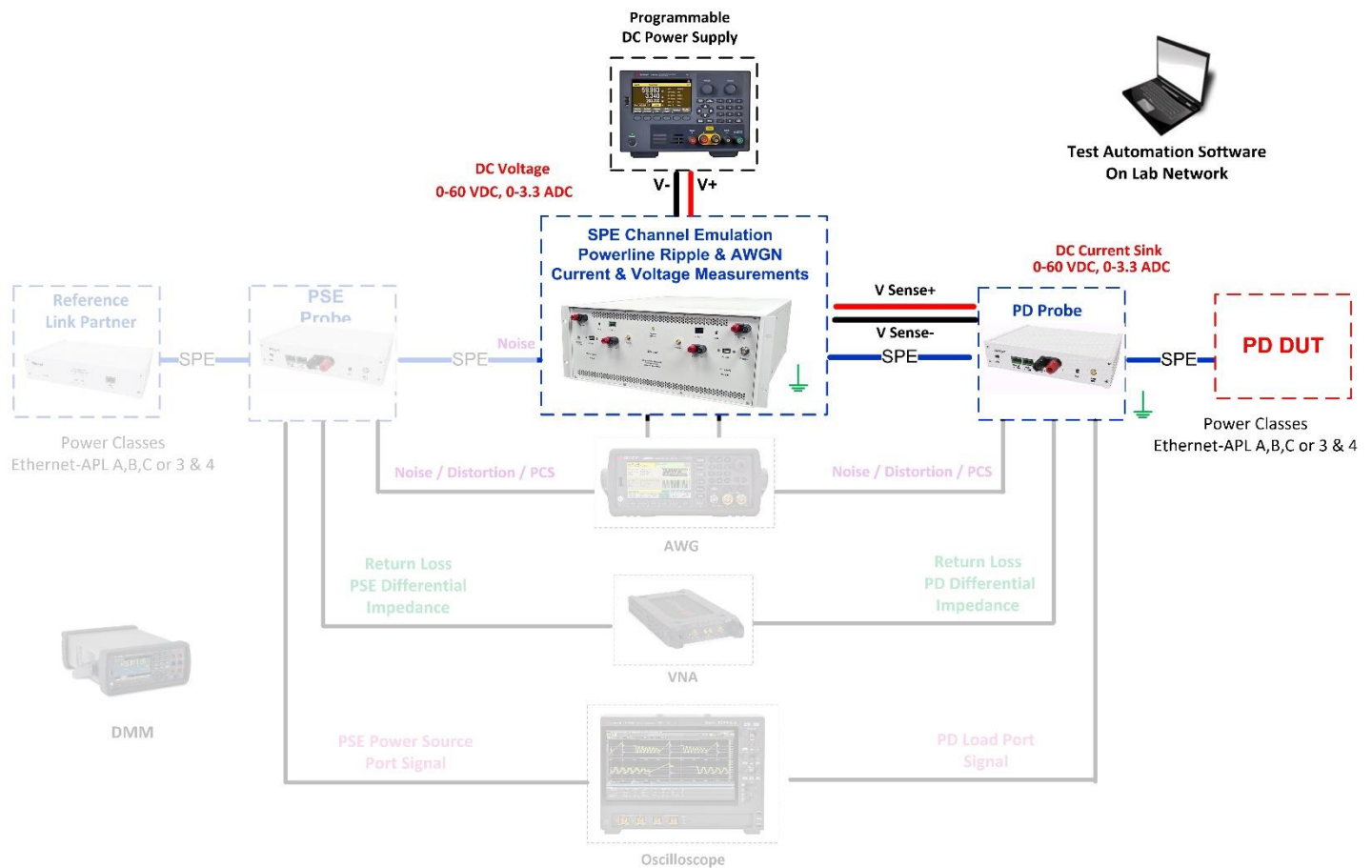
## Required Test Equipment:

1. PD Probe
2. Programmable DC Power Supply (To power the PSE Field Switch DUT)
3. 4950 Channel Emulator
4. Test Automation Software

## Test Setup / Connection Diagram:



### Universal Test Setup for Combined PSE and PD Data & Power Conformance Testing Port Under Test PD



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## Device Under Test Setup:

- It is expected that all tests are performed with PHY communication abilities disabled. This is achieved by disabling Auto-Negotiation and setting the PHY to SLAVE mode. Regardless of the PHY state, each data line of the port under test shall be terminated with a 50 Ohm resistance behind a 1  $\mu$ F series capacitor in the Telebyte Probe.
- Enter the Power Class for the Device Under Test (Class 3 or 4) into the test automation software.

## Expected Results (Pass/Fail Criteria):

Step	Status	Description
8, 12	PASS	The port is polarity insensitive; <b>and</b> powers normally in both polarity configurations; <b>and</b> $I_{PL(1)}$ and $I_{PL(2)}$ are in the range of $I_{PL(MIN)}$ (Class 3 and 4 = 40mA) to $I_{PS(MAX)}$ (Class 3 = 1.250 A or Class 4 = 2000mA)
8, 12	PASS	a. The port is polarity sensitive (according to manufacturer documentation) and is distinctly marked with "+" and "-" polarity marking (markings only required if the port uses a terminal block connector); <b>and</b> b. $I_{PL(1)}$ is less than or equal to $I_{PL(2)}$ ; <b>and</b> c. The port automatically resumes normal operation when power is applied in forward polarity ( $I_{PL(2)}$ is in the range of $I_{PL(MIN)}$ to $I_{PS(MAX)}$ )
8, 12	FAIL	The port is polarity insensitive and does not power normally in both polarity configurations; <b>or</b> $I_{PL(1)}$ and/or $I_{PL(2)}$ are not in the range of $I_{PL(MIN)}$ (Class 3 and 4 = 40mA) to $I_{PS(MAX)}$ (Class 3 = 1.250 A or Class 4 = 2000mA)
8, 12	FAIL	The port is polarity sensitive (according to manufacturer documentation) and uses a terminal block connector that is not distinctly marked with "+" and "-" polarity markings
8, 12	FAIL	The port is polarity sensitive and $I_{PL(1)}$ is greater than $I_{PL(reverse)} = 10mA$
8, 12	FAIL	The port is polarity sensitive and does not power normally in forward polarity ( $I_{PL(2)}$ is not in the range of $I_{PL(MIN)}$ to $I_{PS(MAX)}$ )

## Notes:

## References:

- [1] APL Port Profile 1.2 Section 6.3
- [2] APL Port Profile 1.2 Section A.1, A.3, A.4
- [3] Methods Annex – Disabling PHY
- [4] Methods Annex – Power Supply Voltage Sensing