

# Ethernet-APL Test Guide

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

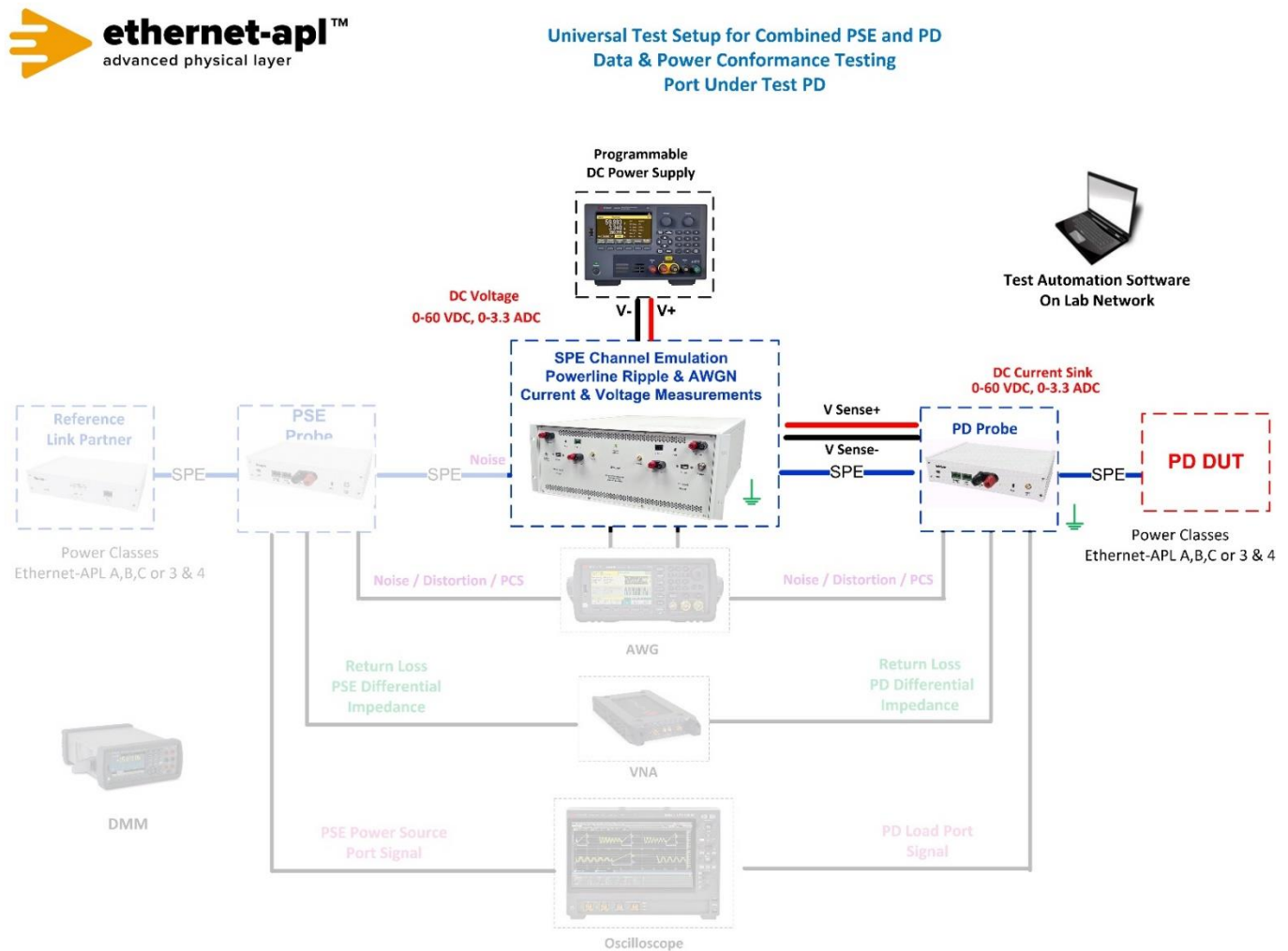
**Test Name:** SL.1.2 Inrush Current

**Purpose/Description:** To verify that a Spur Power Load port operates within the bounds of inrush energy limits.

## Required Test Equipment:

1. PD Probe
2. 4950 Channel Emulator (for current and voltage measurements)
3. Programmable DC Power Supply (to power the PD Load DUT)
4. Test Automation Software

## Test Setup / Connection Diagram:



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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 A, B or C) into the test automation software.
- Enter if the Device Under Test is Intrinsically Safe or Non-Intrinsically Safe.

## Expected Results (Pass/Fail Criteria):

Step	Status	Description
5, 6	PASS	a. The port is intrinsically safe, and $E_{in}$ does not exceed 200 $\mu$ J ; and b. The value of $t_{inrush\_end}$ is less than or equal to 1 ms  or a. The port is non-intrinsically safe, and $E_{in}$ does not exceed 500 $\mu$ J ; and b. The value of $t_{inrush\_end}$ is less than or equal to 1ms  or a. The inrush current does not exceed $IPS(MIN)$ (Class A =55.56mA, Class B = 115mA and Class C = 95mA)
5	FAIL	The value of $t_{inrush\_end}$ is greater than 1ms
6	FAIL	The port is intrinsically safe, and $E_{in}$ exceeds 200 $\mu$ J
6	FAIL	The port is non-intrinsically safe, and $E_{in}$ exceeds 500 $\mu$ J

## Notes:

### References:

- [1] APL Port Profile 1.2 Section 5.4
- [2] Methods Annex – Sampling with Digital Multimeter
- [3] Methods Annex – Inrush Energy Definition and Calculation
- [4] Methods Annex – Disabling PHY
- [5] Methods Annex – Power Supply Voltage Sensing