

# Ethernet-APL Test Guide

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

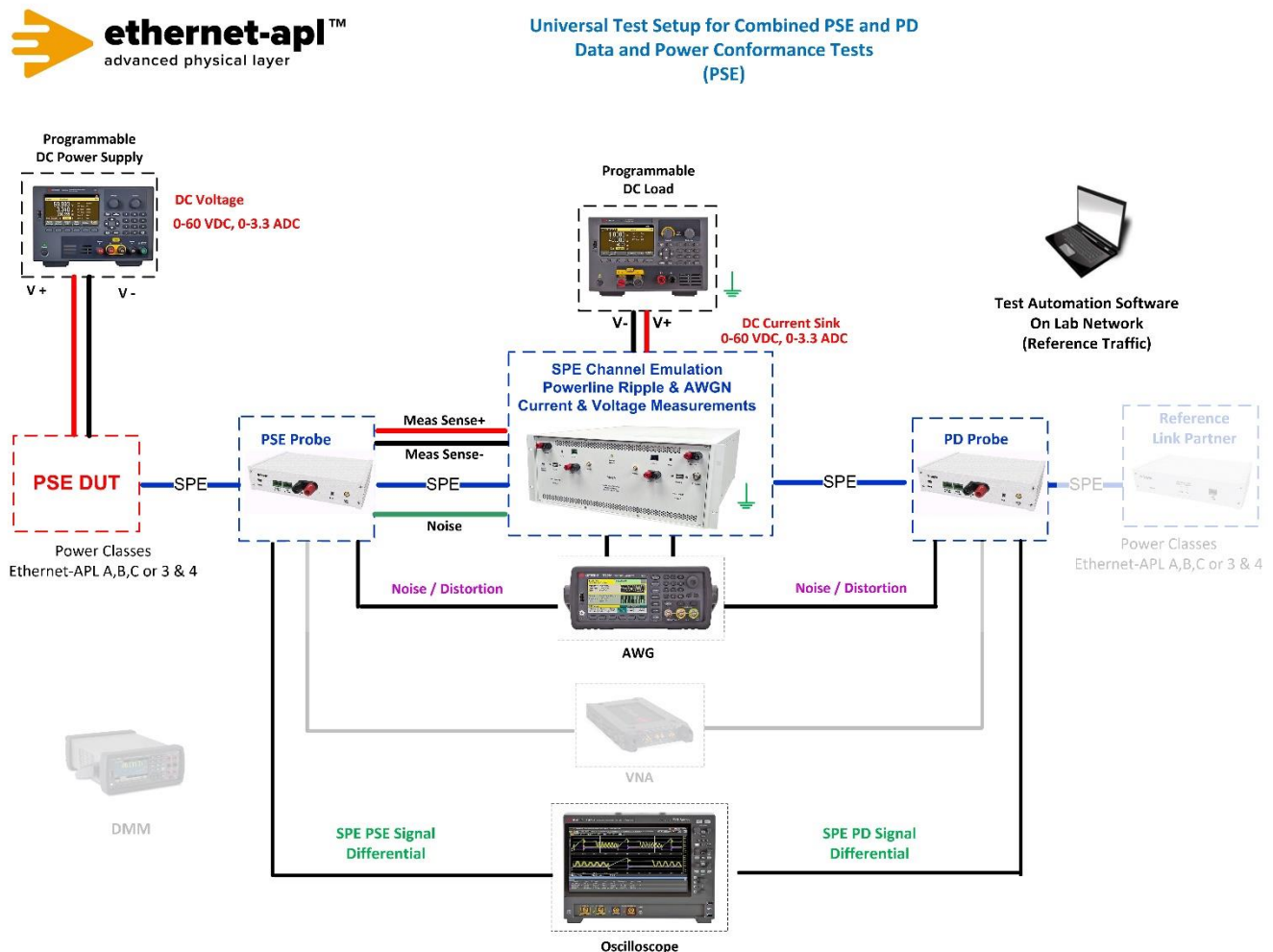
**Test Name:** 98.1.4 DME Voltage Envelope Test

**Purpose/Description:** To verify that the Ethernet-APL Device's DME signaling never exceeds the allowed voltage amplitude.

## Required Test Equipment for PSE:

1. PD Probe
2. 4950 Channel Emulator (for current measurements)
3. PSE Probe
4. Programmable DC Power Supply (to power the PSE DUT)
5. Programmable DC Load (to draw current from PSE DUT)
6. AWG
7. Oscilloscope
8. Test Automation Software

## Test Setup / Connection Diagram (PSE):



# Ethernet-APL Test Guide

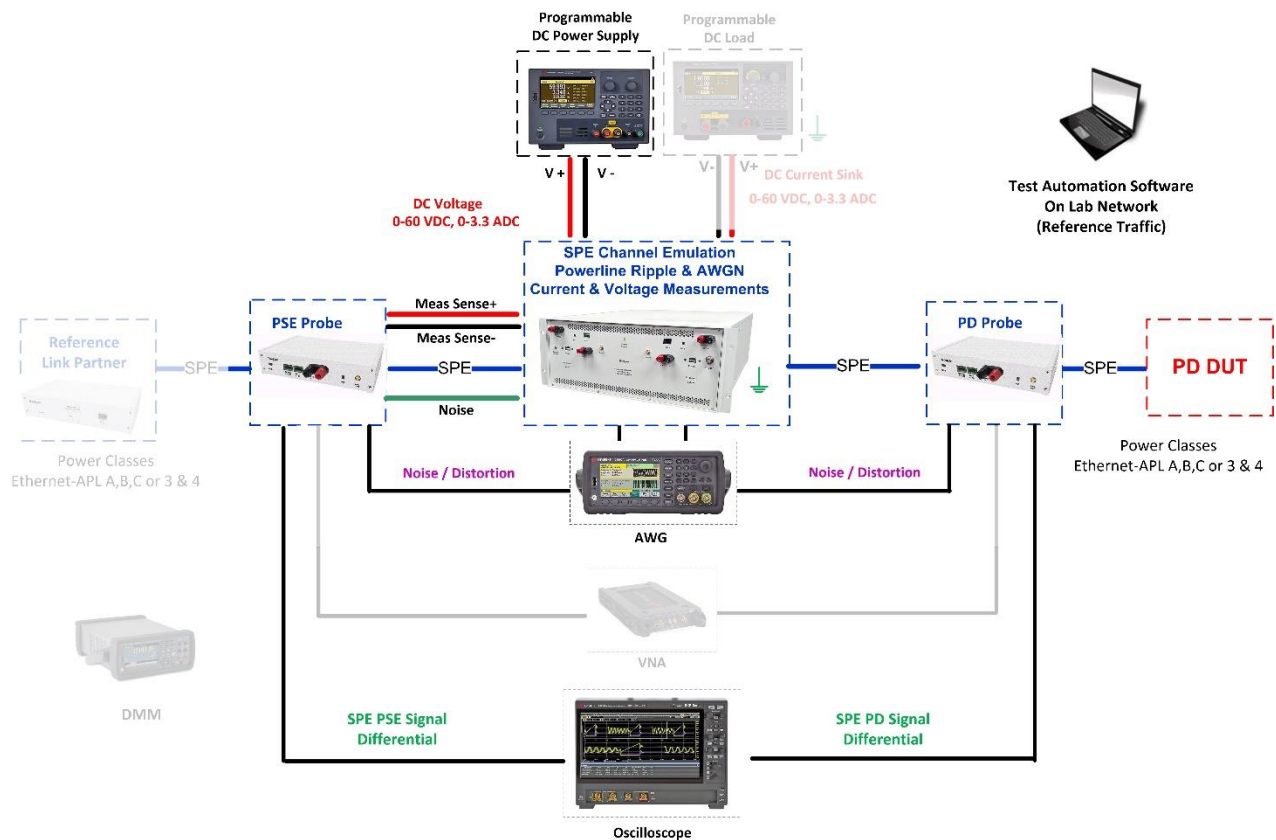
## Required Test Equipment for PD:

1. PD Probe
2. 4950 Channel Emulator (for current measurements)
3. PSE Probe
4. Programmable DC Power Supply (to power the PD Load DUT)
5. AWG
6. Oscilloscope
7. Test Automation Software

## Test Setup / Connection Diagram (PD):



### Universal Test Setup for Combined PSE and PD Data and Power Conformance Tests (PD)



# Ethernet-APL Test Guide

## Device Under Test Setup:

- DUT as 10BASE-T1L default configuration and enable auto-negotiation
- Note if the DUT is a Trunk or a Spur Port
- Enter the Power Class for the Device Under Test (Trunk: Class 3 or 4, Spur: Class A, B or C) into the test automation software.
- A test station capable of Auto-Negotiation, 10BASE-T1L link signaling, and arbitrary packet generation and capturing and decoding ternary symbols. Test stations must be either Option 1B (Figure C.2) or Option 2 (Figure C.3) with test setup as noted below.
- A line-monitoring system capable of decoding Auto-Negotiation DME pages.
- Link Partner test station with controllable 1.2249.14 bit (10BASE-T1L Transmit Disable)

## Expected Results (Pass/Fail Criteria):

Part A: DUT transmits within a valid voltage range while sending DME pages.

Step	Status	Description
A:6	PASS	The DUT is not observed to send DME pages exceeding the voltage requirements.
A:4	FAIL	Any observed voltage level $V_{pp\_max}$ exceeds 1.3 V (1.0 V + 30%).
A:5	FAIL	Any observed voltage level $V_{pp\_min}$ is below 0.7 V (1.0 V - 30%).

## Notes:

## References:

[1] IEEE Std. 802.3-2018 subclause 98.2.1.1.4 (Transmitter peak differential output)