

# Ethernet-APL Test Guide

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

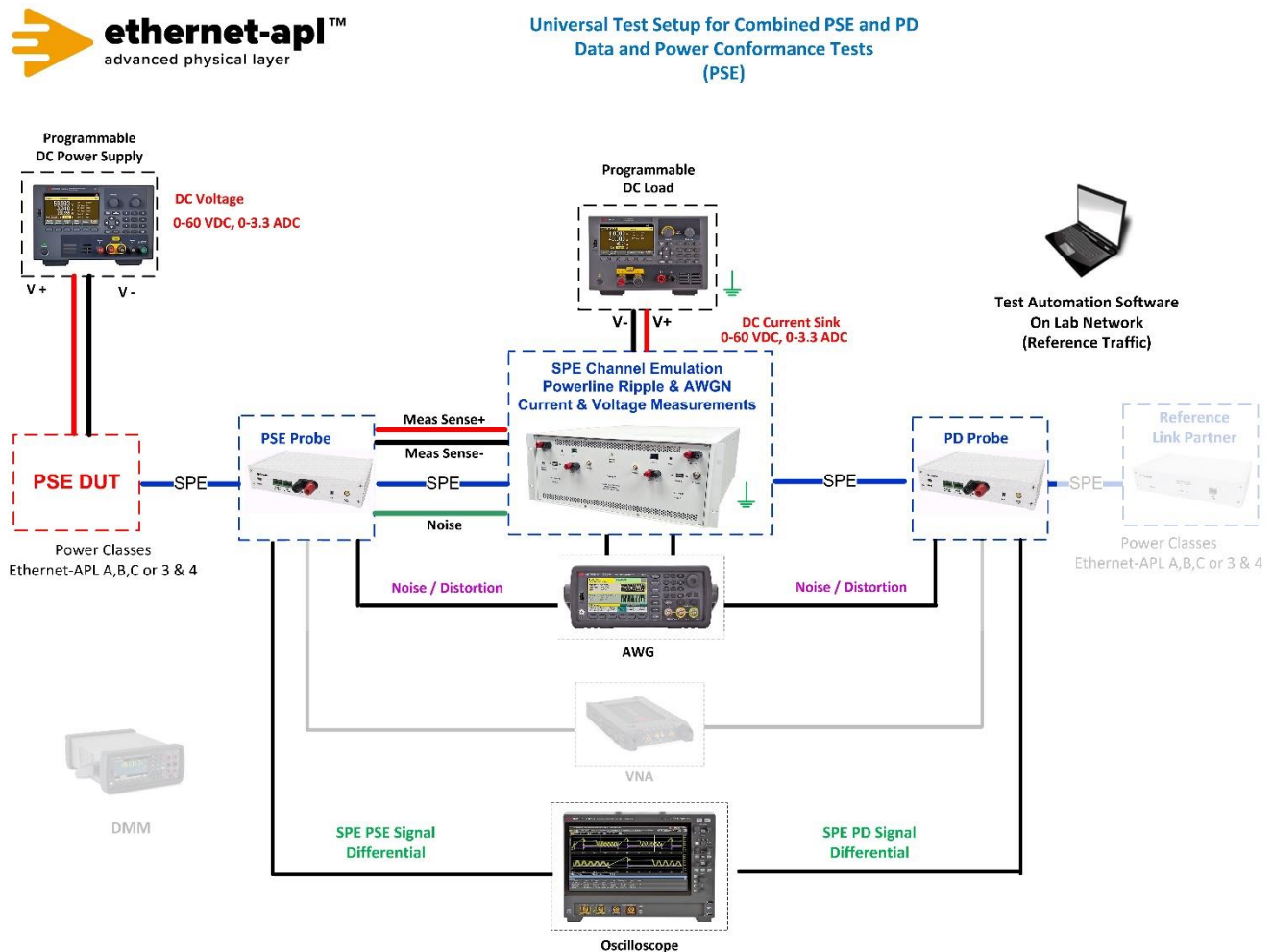
**Test Name:** 146.1.7 APL Transmitter Distortion

**Purpose/Description:** APL Transmitter Distortion.

## Required Test Equipment for PSE:

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

## Test Setup / Connection Diagram (PSE):



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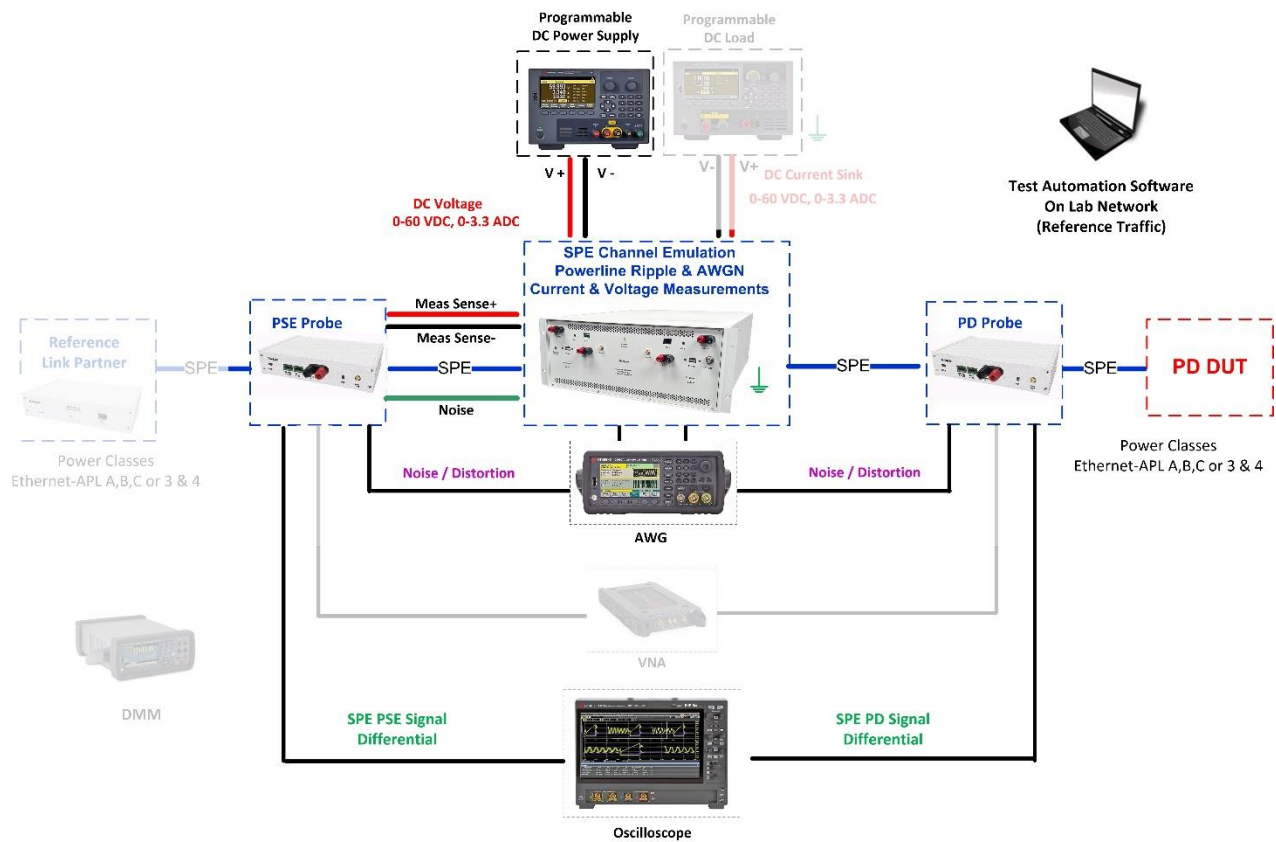
## Required Test Equipment for PD:

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

## Test Setup / Connection Diagram (PD):



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



## Device Under Test Setup:

- 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.

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## Expected Results (Pass/Fail Criteria):

Part A: Spur (1.0 Vpp operating mode) Power Class A, B or C transmitter distortion check.

Step	Status	Description
A	N/A	The DUT is not a spur port.
A:11	Fail	VDiff is greater than 50 mV for any of the ten 10 ms captures.
A:11	Pass	VDiff is equal to or less than 50 mV for all ten 10 ms captures.

Part B: Trunk (2.4 Vpp operating mode) Power Class 3 or 4 transmitter distortion check

Step	Status	Description
B	N/A	The DUT is not a trunk port.
B:11	Fail	VDiff is greater than 50 mV for any of the ten 10 ms captures.
B:11	Pass	VDiff is equal to or less than 50 mV for all ten 10 ms captures.

## Notes:

### References:

- [1] IEEE Std. 802.3-2022, subclause 146.5.2 – Test modes
- [2] Ibid., subclause 146.5.3 – Test Fixtures 478 [3] Test plan Appendix E – 10BASE-T1L Test Fixtures
- [4] IEEE Std. 802.3-2018, subclause 96.5.2 – Test modes
- [5] Ethernet-APL Port Profile Specification v1.1 – clause 4.1