

Ethernet-APL Test Guide

Test Type (Data or Power): Data

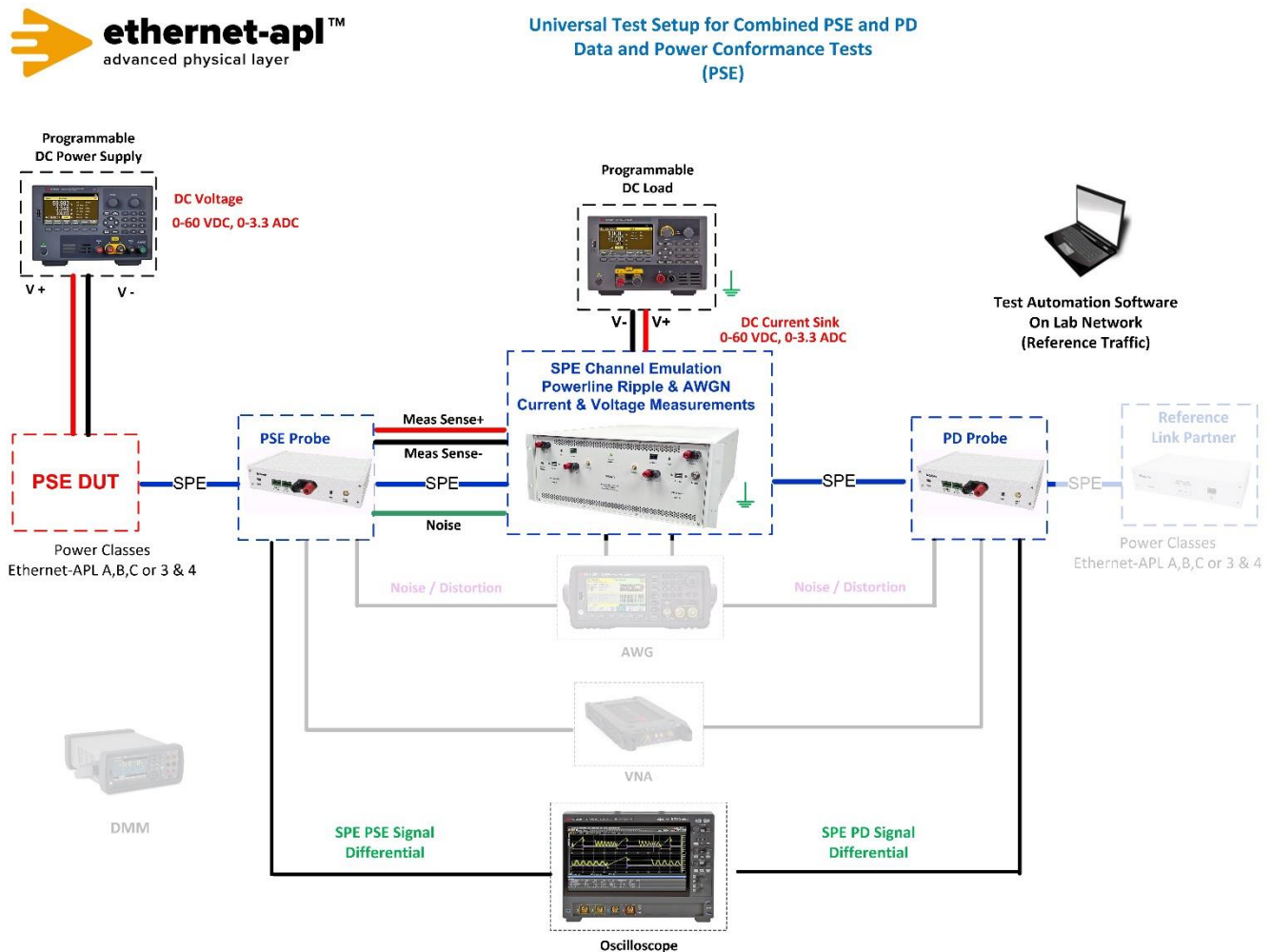
Test Name: 146.1.4 Transmitter Power Spectral Density and Power Level

Purpose/Description: To verify that the transmitter power spectral density and power level are within the conformance limits.

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. Oscilloscope
7. Test Automation Software

Test Setup / Connection Diagram (PSE):



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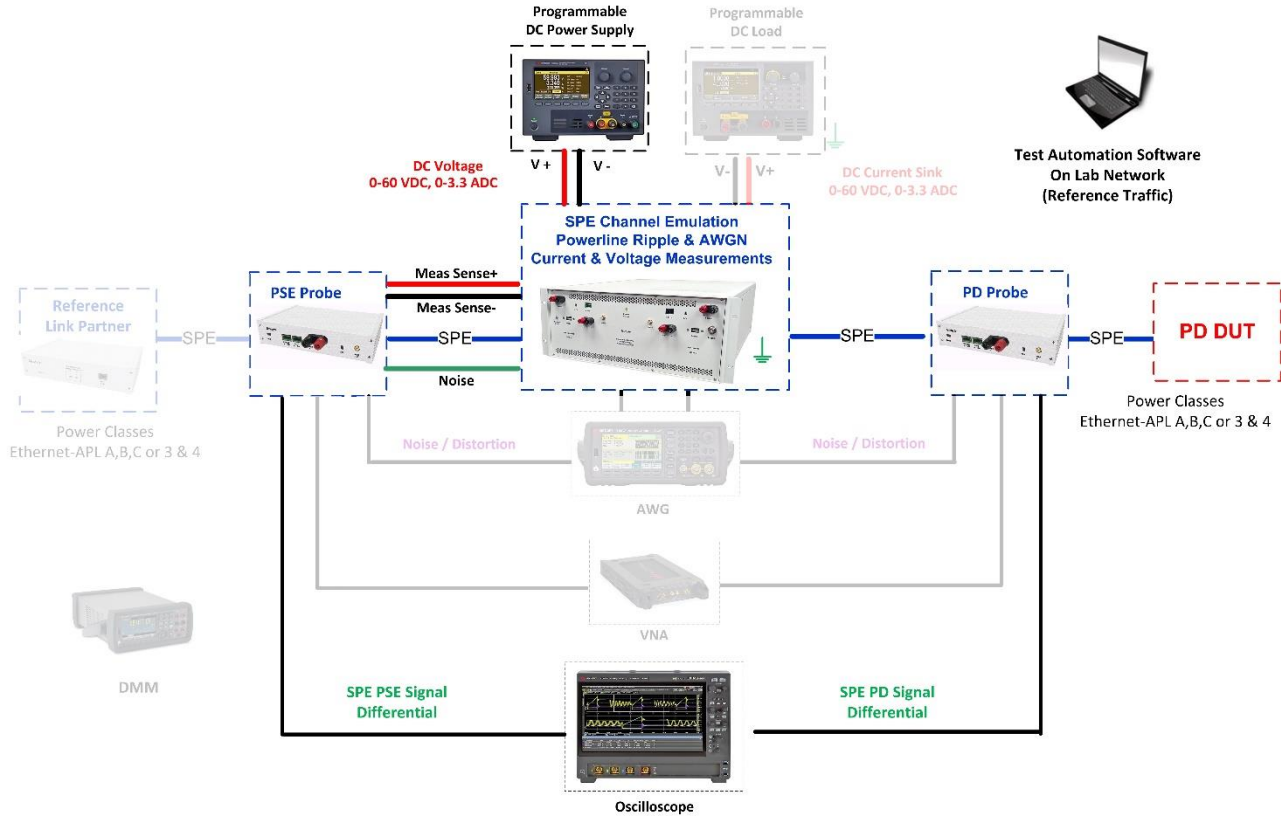
Required Test Equipment for PD:

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. Oscilloscope
6. 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) PSD and Power level

Step	Status	Description
A:7	Fail	The PSD of the transmitter output while operating in test mode 3 is not observed to fit within the transmitter 1.0 Vpp PSD mask defined in [3].
A:7	Fail	The power level of the transmitter output while operating in test mode 3 is not observed to be within 1.0 ± 1.2 dBm.
A:7	Pass	a. The PSD of the transmitter output while operating in test mode 3 is observed to fit within the transmitter 1.0 Vpp PSD mask defined in [3]. b. The power level of the transmitter output while operating in test mode 3 is observed to be within 1.0 ± 1.2 dBm.

Part B: Trunk (2.4 Vpp operating mode) PSD and Power level

Step	Status	Description
B:7	Fail	The PSD of the transmitter output while operating in test mode 3 is not observed to fit within the transmitter 2.4 Vpp PSD mask defined in [3].
B:7	Fail	The power level of the transmitter output while operating in test mode 3 is not observed to be within 8.6 ± 1.2 dBm.
B:7	Pass	a. The PSD of the transmitter output while operating in test mode 3 shall fit within the transmitter 2.4 Vpp PSD mask defined in [3]. b. The power level of the transmitter output while operating in test mode 3 is observed to be within 8.6 ± 1.2 dBm.

Notes:

References:

- [1] IEEE Std. 802.3cg-2019, subclause 146.5.2 – Test modes
- [2] Ibid., subclause 146.5.3 – Test Fixtures
- [3] Ibid., section 146.5.4.4 – Transmitter Power Spectral Density and Power Level
- [4] Test plan Appendix E – 10BASE-T1L Test Fixtures