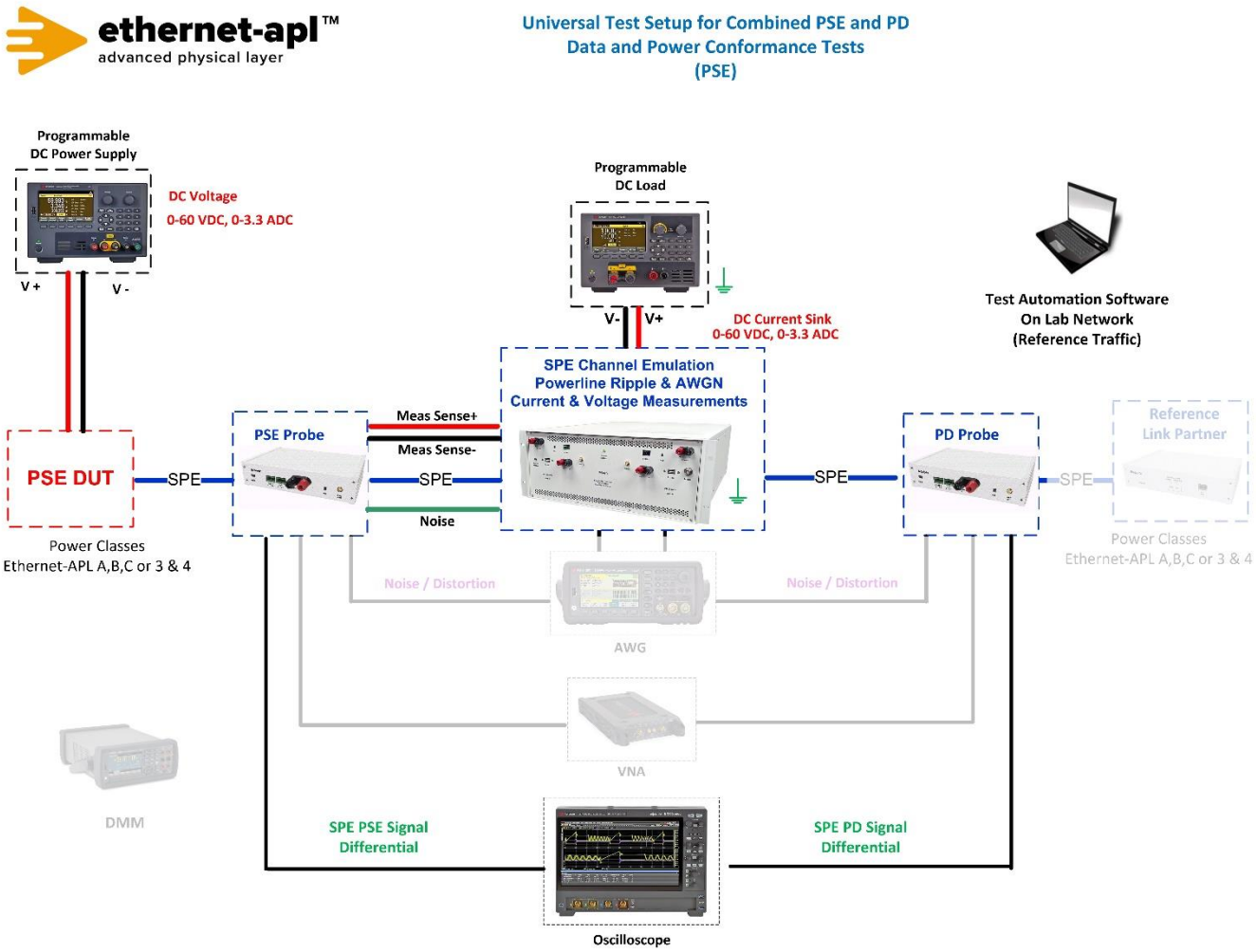
Test Type (Data or Power): Data
Test Name: 146.1.1 Transmitter Output Voltage

Purpose/Description: To verify that the transmitter output voltage does not exceed the maximum and minimum specified value for peak-to-peak voltage.

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

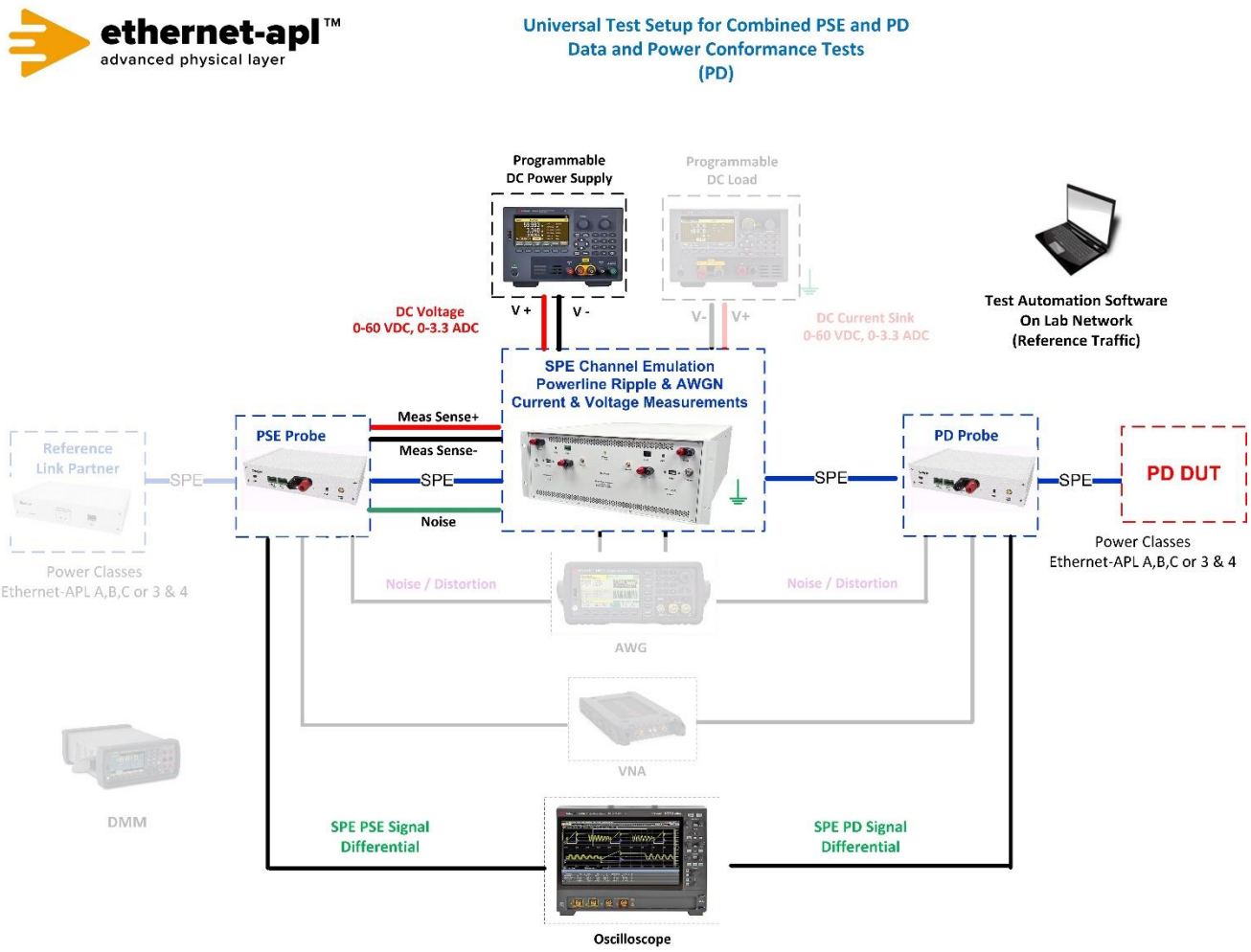
Test Setup / Connection Diagram (PSE):



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):



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.

Expected Results (Pass/Fail Criteria):

Part A: Spur (1.0 Vpp operating mode) transmitter output voltage check

Step	Status	Description
A:10	PASS	In 1.0 Vpp operating mode, both of the Vpp_max and Vpp_min voltages are within 1.0V + 5% / - 15% for all of the ten 1 ms captures.
A:10	FAIL	In 1.0 Vpp operating mode, either of the Vpp_max and Vpp_min voltages are not within 1.0V + 5% / - 15% for any of the ten 1 ms captures.

Part B: Trunk (2.4 Vpp operating mode) transmitter output voltage check

Step	Status	Description
B:11	PASS	In 2.4 Vpp operating mode, both of the Vpp_max and Vpp_min voltages are within 2.4V + 5% / - 15% for all of the ten 1 ms captures.
B:11	FAIL	In 2.4 Vpp operating mode, either of the Vpp_max and Vpp_min voltages are not within 2.4V + 5% / - 15% for any of the ten 1 ms captures.

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 146.5.4.1 – Transmitter Output Voltage
[4] Test plan Appendix E – 10BASE-T1L Test Fixtures