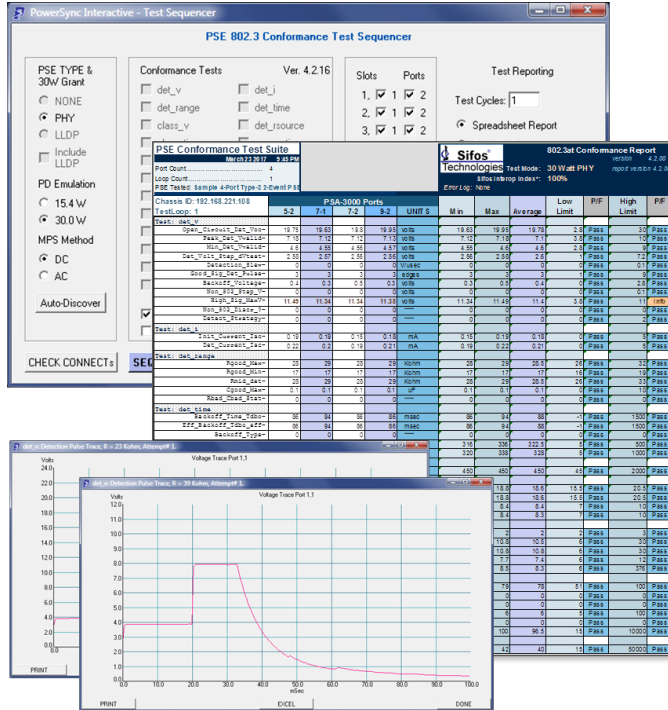




# PSA-CT PSE Conformance Test Suite

for the PSA-3000 PowerSync® Analyzer

## Product Overview



Now certified for EA  
PoE Logo Testing!

## Key Features

- ❑ Robust 802.3at (PoE+) PSE Compliance Testing
- ❑ Fully Automated Port Sequencing and Statistics
- ❑ Greater than 95% 802.3at PICS Coverage from 23 Tests Producing more than 75 IEEE 802.3at Test Parameters per Port
- ❑ Fully Emulates All Type-1 (PD Class 0, 1, 2, or 3) and Type-2 (PD Class 4) PD's Including PoE LLDP-Capable PD's
- ❑ Adapts to All Prevalent PSE Signaling and Power Behaviors
- ❑ Adapts to Prevalent Composite 802.3at and Proprietary Detection Signaling Behaviors
- ❑ Configurable Waveform Trace Diagnostic Generation and Retention to 10 Waveforms per Test
- ❑ Colorful and Informative Spreadsheet Reporting with Compliance (Pass/Fail) Notations and Parameter Statistics
- ❑ Run & Sequence from PSA Interactive GUI or PowerShell PSA Command Line

**Verification, Simplified.**

## **IEEE 802.3 PSE's**

Type-1/Type-2 End-Span  
Type-1/Type-2 Mid-Span  
PoE/PoE+ Connectors  
Power Injectors

## **The Industry "Norm"**

Unmatched 802.3at  
Specification Coverage  
Widely Used by PSE  
Silicon Manufacturers  
Supports EA PoE Logo  
Certification

## **Fully Automated One-Button Testing**

Automatic Adaptation to  
PSE Probing Techniques  
and Hybrid-Legacy  
Probing  
Flexibly Sequence Tests  
and Test Ports  
Pop-Up Spreadsheet  
Reporting with Statistics  
and Limit Evaluation

## **Always Up-To- Date**

Constantly Enhanced  
and Improved  
Tracking Service Support  
Agreement  
Responsive Support

## **Overview**

Power-over-Ethernet (PoE) challenges design and test engineers to evaluate multi-channel, "intelligent" DC power sources that are activated and deactivated through signaling protocols operating over several power delivery and polarity configurations. The application and management of DC power over multiple local area network connections must be completely transparent and non-disruptive to the traditional data transmission functions of those network connections.

### **Higher Power, Smarter Power with 802.3at**

Under the IEEE 802.3at standard, power delivered by a single PSE port to a Powered Device ranges up to 25.5 watts. PSE's must pack more electrical power and more processing power to manage that electrical power. Issues of safety and specification compliance are accentuated by the higher power delivery capabilities of each Ethernet Port. 802.3at also introduced standardized PoE Link Layer Discovery Protocol (LLDP) whereby new generation PD's can communicate power demand and PSE's can communicate power available to those PD's, allowing overall power budgeting with granularity of 0.1 watt per Ethernet port.

### **Fully Automated Testing with Very High Test Coverage**

The PSE Conformance Test Suite for 802.3at produces between 75 and 112 IEEE 802.3at test parameters per PSE port depending upon PSE capabilities. These parameters are measured in 23 distinct tests that may be selected and sequenced across up to 24 PSE ports at a time. The test covers **over 95% of the PSE PICS** (conformance check list items) in the IEEE 802.3at specification\*. The PSE Conformance Test Suite is widely used throughout the internetworking community as the industry "norm" for PSE specification compliance.

### **Certified for 1<sup>st</sup> Party EA Logo Testing**

The PSE Conformance Test Suite, in combination with the PowerSync Analyzer, has been qualified to fulfill all of the PSE testing required to obtain and maintain Ethernet Alliance PoE Logo marks for PSE's.

### **Flexible PD and LLDP Emulation**

When the 802.3at standard replaced its 802.3af predecessor, interoperability between newer 802.3at and older 802.3af equipment had to be assured. The PSE Conformance Test Suite enables test cases required to assure backward compatibility of 802.3at PSE's working with both 802.3at and 802.3af PD's.

### **Robust Diagnostics and Reporting**

The PSE Conformance Test Suite for 802.3at automatically sequences to a pop-up spreadsheet report with full color notations of parameter pass/fail status per port and cross-port statistics for each parameter. This report automatically adapts test limits to the test case that is sequenced. For diagnostic analysis, PSE Conformance Tests can optionally present graphical waveform traces obtained and analyzed during the course of a test. Each trace is individually notated with a description of the trace purpose or measurement parameter.

A specialized EA PoE Logo Certification Report is also provided for 1<sup>st</sup> Party Authorized Test Labs seeking EA PoE Logo certification for PSE's.

\* For 802.3at PICS Coverage, see Sifos application note:  
[802.3at PSE PICS Coverage.pdf](#)

## **Verification, Simplified.**

## PSE Conformance Tests & Parameters

### Detection Probing and Functional Tests

<b>det_v</b>	<b>Detection Pulse Waveform Parameters</b>
	Captures and analyzes PSE detection probe voltages with both valid and slightly non-valid detection signatures.
<b>Voc</b>	Peak open circuit (disconnected) detection voltage
<b>Vvalid(Max)</b>	Maximum Detection Step Level with Valid Signature
<b>Vvalid(Min)</b>	Minimum Detection Step Level with Valid Signature
<b><math>\Delta V_{test}</math></b>	Detection Step Magnitude
<b>Detection Slew</b>	Detection step slew rate
<b>Good_Sig_Det_Pulse</b>	Number of Detection Signal transitions
<b>Vbkoff</b>	Minimum Voltage during detection (ALT B) backoff
<b>Non802_Step_V</b>	Level of any pre-detection signals
<b>High_Sig_MaxV</b>	Maximum detection voltage with high detection signature
<b>Non802_Discr?</b>	Dependence upon Non-802 detection for validity. PSE's that use non-802.3 detection measurements to resolve a valid signature band will report "1".
<b>Detect Strategy</b>	Reports PSE Detection as one of five known strategies including 802.3at standard, proprietary pre-detection, etc.
<b>det_i</b>	<b>Detection Current Limiting</b>
	Measures maximum current sourcing capability from a PSE during detection.
<b>Isc(Init)</b>	Max detection current at minimum detection voltage
<b>Isc(Det)</b>	Max detection current during detection
<b>det_range</b>	<b>Detection Passive Acceptance Range</b>
	Assesses the range of acceptable PD signatures and the reliability of valid detection given random connect timing and capacitive loading.
<b>Rgood_Max</b>	Maximum accepted detection resistance signature
<b>Rgood_Min</b>	Minimum accepted detection resistance signature
<b>Rmid_det</b>	MAX (or MIN) detection resistance given random connections
<b>Cgood_Max</b>	Maximum accepted detection capacitance signature
<b>Rbad_Cbad_Stat</b>	Power-Up status given a 35Kohm (marginally high) resistive signature with the lowest Capacitive signature rejected by the PSE.
<b>det_time</b>	<b>Detection Timing</b>
	Measures detection backoff and detection probe timing parameters.
<b>Tdbo</b>	Detection back-off time (between failed detections)
<b>Tdbo_eff</b>	Effective back-off time for PSE's that ignore rather than disable detection measurements
<b>Tdet</b>	802.3at detection time duration
<b>Tdet_tot</b>	Total detection time including pre-detection measurements
<b>Backoff_Type</b>	Reports PSE Detection back-off as one of several known strategies including 802.3at standard, legacy, and 4-pair detection schemes
<b>det_rsource</b>	<b>PSE Output Resistance during Detection</b>
	Measures effective source resistance of PSE port during detection.
<b>Zout</b>	PSE estimated output impedance during detection

### Classification Signaling and Functional Tests

<b>class_v</b>	<b>Classification Voltages</b>
	Captures and analyzes PSE classification voltage levels, focusing on only the final classification performed prior to power-up.
<b>Vclass</b>	Class Pulse Average Voltage with 1 mA class signature
<b>Vclass_min</b>	Class Pulse Average Voltage with 45 mA class signature
<b>Vmark</b>	Mark Region Voltage with 4 mA mark signature load

## Classification Signaling and Functional Tests

	<b>Vmark_min</b>	Minimum Port Voltage measured over both MARK regions until power-up
<b>class_time</b>	<b>Classification Timing</b>	
		Captures and analyzes PSE classification signal timing, focusing on only the final classification performed prior to power-up.
	<b>Event_Count</b>	Count of class pulses
	<b>Tpdc</b>	Duration of class pulse given Single-Event Classification
	<b>Tcle1</b>	Duration of first class pulse given 2-Event Classification
	<b>Tcle2</b>	Duration of second class pulse given 2-Event Classification
	<b>Tme1</b>	Duration of first mark interval given 2-Event Classification
	<b>Tme2</b>	Duration from end of second class pulse to power-up given 2-Event Classification
<b>class_err</b>	<b>Classification Current Limiting</b>	
		Evaluates any current limiting applied to classification signals by PSE as well as PSE powering behaviors following overloaded or illegal classification signatures.
	<b>Class_lim</b>	Maximum Class Current before PSE starts to limit Class Current
	<b>Vport_CL_lim</b>	Power-Up response (as binary) following a current limited classification
	<b>Vport_CL_err_1</b>	Power-Up response (as binary) following a 55mA (invalid) classification load
	<b>Mark_lim</b>	Minimum Mark Current Supported during 2-event Mark Region - tested at 5.5 mA and 105 mA given 2-Event Classification
	<b>Vport_CL_err_2</b>	Power-Up response (as binary) following up to 3 successive class signatures that changed from Event #1 to Event #2 (asymmetrical signature)
	<b>Treset</b>	Duration of PSE IDLE state following asymmetrical class signature
<b>class_ildp</b>	<b>LLDP Protocol and Mutual Discovery Testing</b>	
		Assesses PSE LLDP basic protocol fields, protocol timing, and power request processing for both Type-1 and Type-2 PD's.
	<b>PSE_Source_Priority</b>	Bit Field for PSE Source, Priority, Reserved
	<b>PSE_MDI_Pwr_Sup</b>	Bit Field from legacy TLV for Port Class, MDI Power Support, MDI Power State, Pair Selection, and Reserved
	<b>PSE_LLDP_Time_1</b>	Time from Power-ON state until first PoE LLDP frame from PSE given Type-1 PD
	<b>PSE_LLDP_Type_1</b>	PSE Type advertised by a PSE given Class 0-3 PD signature
	<b>PSE_Echo_Time_1</b>	Time for PSE to echo back the PD Requested Power level
	<b>PSE_Alloc_Pwr_1</b>	Allocated Power in response to 8.1 W PD Request from a Class 0–3 PD
	<b>PSE_Alloc_Time_1</b>	Time to respond To 8.1 W PD Request with Power Allocated
	<b>PD_Power_Adjust_1</b>	Allocated Power in response to a Change Request from 8.1W to 13W
	<b>PSE_Adjust_Time_1</b>	Time to echo a PD 13 watt PD Change Request
	<b>PSE_LLDP_Time_2</b>	Time from Power-ON state until first PoE LLDP frame from PSE given Type-2 PD
	<b>PSE_LLDP_Type_2</b>	PSE Type advertised by PSE given Class 4 PD signature
	<b>PSE_Echo_Time_2</b>	Time for PSE to echo back the PD Requested Power level
	<b>PSE_Alloc_Pwr_2</b>	Allocated Power in response to 20.3W PD Request from a Class 4 PD
	<b>PSE_Alloc_Time_2</b>	Time to respond To 20.3 W PD Request with Power Allocated
	<b>PD_Power_Adjust_2</b>	Allocated Power in response to Change Request from 20.3W to 25.5W
	<b>PSE_Adjust_Time_2</b>	Time to echo a PD 25.5 watt PD Change Request
	<b>Link_Down_Shutdown_?</b>	Indicates if power removed on Link Drop after LLDP negotiation

## Power-Up Processes

<b>pwrup_time</b>	<b>Power-Up Timing Parameters</b>	
		Measures power-up rise time and time delay from completion of final detection until power applied.
	<b>Trise</b>	Rise Time from 10% to 90% of Vport
	<b>Tpon</b>	Time from end of detection until power-up, Tpon is measured from the final complete detection probe preceding a power-up

## Power-Up Processes

### pwrup\_inrush

#### PSE Current Limiting Behaviors During Power-Up

Evaluates PSE current limiting and inrush overload tolerance parameters. Assures compliance to 802.3at figure 33-14, Inrush current and timing limits in the POWER\_UP state.

<b>Init_Inrush</b>	Maximum output current immediately after 1 msec of a severe inrush overload
<b>Max_Inrush_c0</b>	Maximum output current in time interval from 1 to 75 msec given Class 0-3 PD
<b>Max_Inrush_c4</b>	Maximum output current in time interval from 1 to 75 msec given Class 4 PD
<b>Min_Inrush</b>	Minimum output current while current limiting in time interval from 1 to 50 msec given 30V or higher port voltage
<b>Tinrush</b>	Duration of current limiting until PSE removes power
<b>Inrush_45m</b>	Port voltage after 50msec following 45 msec current limiting inrush overload
<b>Max_Init_Inrush</b>	Maximum output current up to 1 msec given a severe inrush overload
<b>Vinrush</b>	Average Port Voltage - PSE current limiting, PSA foldback suppression applied
<b>Inrush_Strategy</b>	Indicator if PSE uses "legacy_powerup" exception and consequences thereof categorized into one of five possible outcomes

## PSE Powered-On Performance and Processes

### pwrn\_v

#### Powered Port Voltage, Ripple, and Noise

Measures PSE port DC and AC voltages in response to minimum and maximum power loads.

<b>Vport_min_N</b>	Min Port voltage with 0.5 Watt and Pport_Max (PD Class) loading
<b>Vport_max_N</b>	Max Port voltage with 0.5 Watt and Pport_Max (PD Class) loading
<b>Vpp_ripple_N</b>	Peak AC Ripple with 0.5 Watt and Pport_Max (PD Class) loading
<b>Vpp_noise_N</b>	Peak AC Noise with 0.5 Watt and Pport_Max (PD Class) loading
<b>Vtrans_max_N</b>	Maximum Port Voltage measured during a 5msec load transient from 12mA to Pport_Max / Vport and back.
<b>Vtrans_min_N</b>	Minimum Port Voltage measured during a 5msec load transient from 12mA to Pport_Max / Vport and back.

### pwrn\_pwracap

#### PSE Port Power Capacity

Measures the maximum power delivery capability of a PSE port given various PD Classifications and LLDP power allocations.

<b>Pcon_c0=</b>	Maximum output power from PSE Port given Class 0 PD
<b>Icon_%_c0=</b>	Maximum static output current relative to 802.3at Icon(Pclass_0)
<b>Pcon_c1=</b>	Maximum output power from PSE Port given Class 1 PD
<b>Icon_%_c1=</b>	Maximum static output current relative to 802.3at Icon(Pclass_1)
<b>Pcon_c2=</b>	Maximum output power from PSE Port given Class 2 PD
<b>Icon_%_c2=</b>	Maximum static output current relative to 802.3at Icon(Pclass_2)
<b>Pcon_c3=</b>	Maximum output power from PSE Port given Class 3 PD
<b>Icon_%_c3=</b>	Maximum static output current relative to 802.3at Icon(Pclass_3)
<b>Pcon_c4=</b>	Maximum output power from PSE Port given Class 4 PD
<b>Icon_%_c4=</b>	Maximum static output current relative to 802.3at Icon(Pclass_4)
<b>Type-2_Enable</b>	Verifies > 450 mA continuously available at 80 msec following 2-event power-up for 2-event, Type-2 PSE's or verifies >450 mA is not available for LLDP capable Type-2 PSE's prior to negotiation
<b>Pclass_LLDP_22.7</b>	Indicator of PSE ability to deliver Pclass (Icon) given 22.7W power grant
<b>Pclass_LLDP_24.5</b>	Indicator of PSE ability to deliver Pclass (Icon) given 24.5W power grant

### pwrn\_maxi

#### PSE Response to Maximum Overloads

The pwrn\_maxi test evaluates PSE characteristics with respect to the POWER\_ON state PI operating current templates in Figure 33-15 of the 802.3at specification.

<b>Ilim_Peak</b>	Maximum output current tolerated by PSE in time frame of 8 to 75 msec
<b>Ilim_Min_1</b>	Minimum output current up to 50 msec with 402mA load pulse and foldback suppression applied to assure > 30VDC (Type-1 PD emulation)
<b>Tlim_1</b>	Time to port shutdown in response to 400 mA overload given Type-1 PD
<b>Vlim_1</b>	Average port voltage coincident with Tlim_1 measurement
<b>Ilim_Max_1</b>	Maximum output current from 1 to 75 msec given 700mA load pulse and foldback suppression active given a Type-1 PD
<b>Ilim_Low_V_Tol_1</b>	Measures time-to-port-foldback given a Type-1 PD with extreme overload
<b>Ktran_lo_1</b>	% excursion below 50V given 250usec (fast) overload transient (401 mA) given a Type-1 PD (Type-2 PSE's only)

## Power-Up Processes

<b>Ilim_Min_2</b>	Minimum output current up to 50 msec with 686mA load pulse and foldback suppression applied to assure > 30VDC given Type-2 PD emulation
<b>Tlim_2</b>	Time to port shutdown in response to 684 mA overload given Type-2 PD
<b>Vlim_2</b>	Average port voltage coincident with Tlim_2 measurement
<b>Ilim_Max_2</b>	Maximum output current from 1 to 75 msec given 860mA load pulse and foldback suppression active given a Type-1 PD
<b>Ilim_Low_V_Tol_2</b>	Essentially a measure of time-to-port-foldback given a Type-2 PD
<b>Ktran_lo_2</b>	% excursion below 50V given 250usec (fast) overload transient (686 mA) given a Type-2 PD
<b>pwrn_overld</b>	<p><b>PSE Response to Maximum PD Power Transients</b></p> <p>The pwrn_overld test assesses powered PSE port behaviors with respect to Ipeak, the maximum power overload allowed to a PD as defined in Equation 33-4 of the 802.3at standard.</p> <p><b>%Ipeak_N</b> Percent of required Ipeak current that is supported over 50msec duration where Ipeak required is defined by Equation 33-4 given a Type-N PD – maximum level verified is 125%</p> <p><b>Vport_Ipeak_N</b> Min Port Voltage at Ipeak transient pulse given a Type-N PD</p> <p><b>Vport_5%DC_N</b> Min Port Voltage over 5 seconds with a quantity of 50 msec Ipeak pulse transients separated by 1 second (5% duty cycle) given a Type-N PD</p>

## MPS Processes for Power Removal on PD Disconnect

<b>mpps_ac_pwrdrn</b>	<p><b>Power Timing and Load Current Impact on AC MPS PSE's</b></p> <p>Evaluates power removal timing and DC load tolerance on an AC MPS PSE.</p> <p><b>Tmpdo</b> Disconnect power-down timing from disconnect event</p> <p><b>I_hold_ac</b> Maximum DC Load Current tolerated with AC MPS Disconnect Shutdown</p>
<b>mpps_ac_vf</b>	<p><b>AC MPS Signaling Characteristics</b></p> <p>Measures AC MPS signaling characteristics during the Tmpdo interval.</p> <p><b>V_open</b> Peak-Peak AC probing voltage following PD Disconnect</p> <p><b>V_open_%Vport</b> Peak-Peak AC probing voltage expressed as a % Vport_pse</p> <p><b>Fp</b> AC probing signal frequency following PD Disconnect</p> <p><b>AC_MPS_SR</b> AC probing signal slew rate</p> <p><b>Isac</b> Signal current sourced by AC MPS signal generation resource</p>
<b>mpps_ac_voff</b>	<p><b>AC MPS Peak Voltage Characteristics</b></p> <p>Measures voltage peaks following PD disconnect and power-down events given an AC MPS PSE.</p> <p><b>V_open1</b> Peak port voltage found after AC MPS power removal event</p> <p><b>Vopen_pk</b> Peak port voltage following PD disconnect over a period of one second</p>
<b>mpps_dc_valid</b>	<p><b>DC MPS Valid Signature Timing Characteristics</b></p> <p>Measures intermittent load tolerance thresholds of a DC MPS PSE.</p> <p><b>Tmps</b> Minimum valid signature ACTIVE time required for DC MPS validity</p> <p><b>Duty_Cycle_tol</b> PSE power response to valid / invalid load cycling of 16.7% duty cycle</p>
<b>mpps_dc_pwrdrn</b>	<p><b>Power Timing and Threshold Assessment on DC MPS PSE's</b></p> <p>Evaluates power removal timing and DC load requirements on a DC MPS PSE.</p> <p><b>I_hold</b> Minimum current required to maintain power given DC MPS PSE</p> <p><b>Tmpdo</b> Disconnect power-down timing from start of invalid signature</p> <p><b>Vopen_pk</b> Peak port voltage following PD disconnect over a period of one second</p>

## PSE Power-Down Characteristics

<b>pwrdrn_overld</b>	<p><b>PSE Response to Non-Current Limiting Overloads</b></p> <p>Evaluates PSE handling of non-current limiting overloads in the PSE discretionary region of the PI operating current templates in Figure 33-15 of the 802.3at specification.</p> <p><b>Icut_N</b> Smallest load current of duration equal to Tcut_Max, or 75 msec, that causes immediate or delayed power removal given a Type-N (1 or 2) PSE.</p> <p><b>Tcut_N</b> Time from start of transient until power removal but not exceeding 75msec, the duration of the applied load transient.</p> <p><b>Isoft_N</b> Smallest load current of duration equal to 2 seconds that causes immediate or delayed power removal given a Type-N (1 or 2) PSE.</p> <p><b>Tsoft_N</b> Time from start of transient until power removal but not exceeding 2 seconds, the duration of the applied load transient.</p>
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## PSE Power-Down Characteristics

### pwrnd\_time

#### AC MPS Signaling Characteristics

Evaluates PSE disconnect discharge timing as well as output characteristics during power removal.

<b>Toff</b>	Power discharge time with hypothetical 320KΩ load.
<b>Cout</b>	PSE output capacitance during power discharge
<b>Rp</b>	PSE shunt output resistance during power discharge

### pwrnd\_v

#### AC MPS Peak Voltage Characteristics

Measures PSE post-power-removal characteristics following an overload shutdown condition.

<b>Voff</b>	IDLE state voltage between detections after overload shutdown
<b>Ted</b>	Time from overload condition shutdown until a detection probe leading to a successful power-up
<b>Ved</b>	Peak voltage over the Ted interval

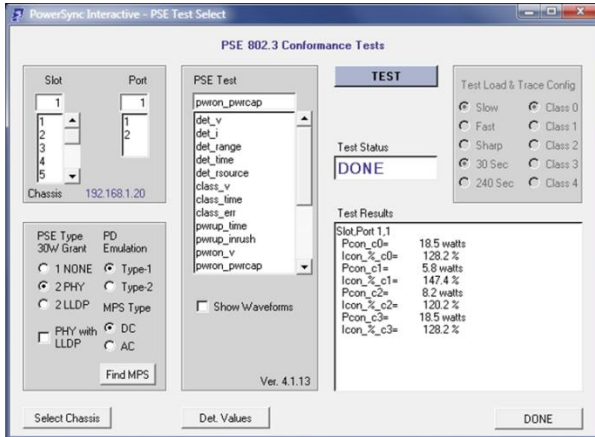
## Configuring and Running the PSE Conformance Test Suite

The PSE Conformance Test Suite is accessed from either PSA Interactive Software (GUI) or PowerShell PSA, an extended Tcl/Tk command line shell. PSA Interactive provides two menus with access to the PSE Conformance Test Suite: The **PSE Tests** menu and the **Sequencer** menu.

Within each of these menus, users perform 3 declarations that affect testing and test options:

- PD Emulation: Type-1 (**15.4W**) or Type-2 (**30W**)
- PD 30W Grant Type: **NONE** (Type-1 PSE), **PHY** (Type-2 2-Event PSE), or **LLDP** (Type-2 LLDP)
- PSE Disconnect Detection Method: **AC MPS** or **DC MPS**

The **PSE Tests** menu is geared to running a single test at a time and capturing results from that test. The menu allows users to select a particular PSA test port (slot and port) and then execute a test. Users may optionally select to have any and all measurement waveforms that are used by a given test captured, labeled, and displayed as the test runs.



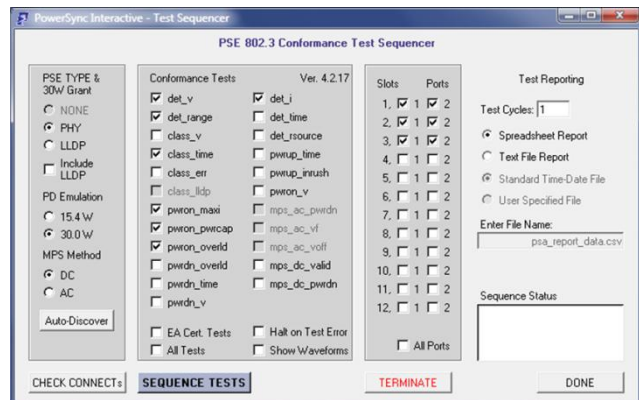
The **PSE Tests** menu also provides access to certain other specialized testing functions that include user specified loading profiles and LLDP traces.

The **Sequencer** menu allows users to select one or more tests that are to be automatically sequenced along with the PSA test ports that will also be sequenced.

### PSA Interactive PSE Tests Menu

User's may also select one of several reporting options, the most common of which will produce a pop-up (Microsoft Excel) spreadsheet report that performs all test parameter limit checking and analysis.

Multi-Port PSE connections can rapidly be verified prior to testing from this menu and as with the PSE Tests menu, users may opt to have waveform traces produced by each test appear on screen as each test runs. Users may also choose to have the sequence terminate as soon as an error condition develops in any test on any port.



### PSA Interactive Sequencer Menu

## The PSE Conformance Test Suite Standard Report

The standard spreadsheet test report for the PSE Conformance Test Suite provides efficient feedback by clearly notating any specification compliance violations both by test parameter and by test (PSE) port. The report also accumulates minimum, maximum, and average parameter values across PSE ports so that users can spot individual port deviations and assess performance to design goals. Multiple cycles of testing can be specified to produce one report page per sequence cycle.

All test limit processing automatically adapts to the mode of PD Emulation, the type of PSE (e.g. Type-1 or Type-2), and other factors that are specified before the sequence begins. Test limit tables are found on the **Limits** page of the report.

The report includes a **Notes** page with detailed explanations of each parameter of each test and an **Interop** page that rates the "Interop" Risks of any particular combination of specification violations. This leads to an aggregate **Interop Index** when a high percentage of available tests are run.

The report will automatically scale to the number of tested PSE ports.

PSE Conformance Test Suite			PSA-3000 Ports										802.3at Conformance Report					
Port Count: 8 Loop Count: 1 PSE Tested: Sample 8-Port Type-2 LLDP PSE			1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	UNIT S	Min	Max	Average	Low Limit	P/F	High Limit	P/F
Test: det_v			8.47	8.0	8.05	8.7	8.43	8.47	8.4	8.43	volts	8.4	8.7	8.53	2.3	Pass	30	Pass
Test: det_i			1.11	1.08	1.15	1.21	1.23	1.28	1.15	1.2	mA	1.08	1.25	1.19	0	Pass	5	Pass
Test: det_range			26	28	29	29	29	28	28	29	kOhm	28	28	28.9	26	Pass	32	Pass
Test: det_time			308	308	309	313	309	308	307	309	msec	301	315	308	-1	Pass	1500	Pass
Test: class_v			17.5	17.6	17.5	17.5	17.3	17.3	17.2	17.2	volts	17.2	17.5	17.4	15.5	Pass	20.5	Pass
Test: class_time			15.2	14.6	20.5	23.8	17.3	14.7	15.3	16	msec	14.5	23.8	17.4	6	Pass	75	Pass
Test: class_amp			98	88	85	88	87	87	87	87	mA	85	87	86	81	Pass	100	Pass
Test: class_bde			0	0	0	0	0	0	0	0	sec	0	0	0	0	Pass	0	Pass
Test: interop_index			4116	97.7	117.2	144.5	117.2	93.8	187.3	125	msec	93.8	411.6	161.8	0	Pass	400	Fail
Test: interop_noise			53.2	53.4	52.5	53.3	53.4	53.4	53.4	53.4	V	52.9	53.4	53.3	50	Pass	57	Pass
Test: interop_power			30.8	30.8	30.4	30.8	30.1	30.8	30.8	30.7	watts	30.4	30.8	30.7	28	Pass	38.9	Pass
Test: interop_timing			4.3	0.3	1.3	2.3	1.3	213.5	5.3	197.3	mA	0.3	213.5	52	0	Pass	1750	Pass

PSE Conformance Test Suite Standard Report (excerpt)

## EA PoE Logo Certification

The Ethernet Alliance (EA) introduced an industry program in 2017 to certify PSE's and powered devices (PD's) so that interoperability and safety factors associated with PoE network equipment could be better ensured across the industry. The certification program includes a PoE Logo, or mark, that can be applied to certified equipment and to associated literature. Additionally, the program includes a web-based registry describing all certified equipment.

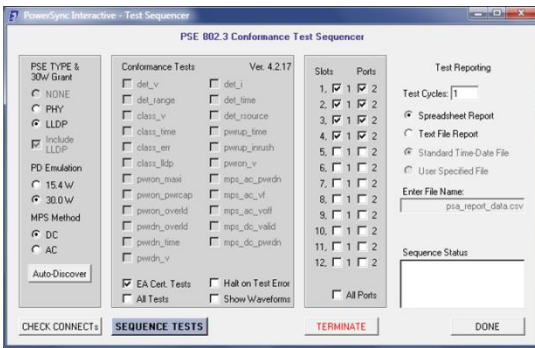
The EA PoE Logo Certification program allows that equipment (PSE's and PD's) seeking certification can be sent to an Authorized 3<sup>rd</sup> Party Test Lab for IEEE 802.3 PoE conformance testing and alternatively allows that network equipment manufacturers can perform in-house testing if they apply for and receive certification to operate as an **Authorized 1<sup>st</sup> Party Test Lab**. In order to operate as an Authorized 1<sup>st</sup> Party Test Lab, previously authorized test equipment and/or test systems must be deployed within that 1<sup>st</sup> Party Lab facility.





For producers of PoE equipment, the **1<sup>st</sup> Party** alternative may offer *significant* benefits.

- **Lower external costs** to obtain and maintain EA logo certifications across a range of products
- **Reduced engineering effort** as testing normally performed to verify designs and design changes can also support the certification
- **Faster turn-around** time to obtain and update EA logo certifications
- **Flexibility** to routinely update products and to demonstrate certification compliance with no incremental effort
- **Avoid effort and information disclosures** required to justify multiple product versions (also referred to as “derivative product”)



PSA Interactive Sequencer: EA Cert Test Mode

and the output of that testing will be a special EA approved spreadsheet report. PSE testing will use the specified PSE settings (**PSE Type**, **PD Emulation**, and **MPS Method**) and will run across the user-specified test ports. Testing may be performed on a single port although the EA certified product registry will note if testing was performed on all PSE ports, thus implying that this is advantageous.

The special EA Certification Test Report, unlike the standard PSE Conformance Test Report, will not allow any editing or manipulation of test data or test limits.

The **PSA-3000** with the **PSE Conformance Test Suite** has been certified to perform a full range of PSE tests required for EA PoE Logo certification. The Ethernet Alliance, working with their contracted “auditor”, UNH-IOL, maintains a separate online registry of certified test systems and equipment.

When EA certification testing is run using the PSE Conformance Test Suite, the list of tests and the reporting options are fixed such that a prescribed set of tests will be run

EA PoE Cert Test Report (excerpt)

## Ordering Information

- PSA-CT\***, PSE Conformance Test Suite for 802.3at for One PSA Controller (Up to 24 Test Ports)
- PSA-TS1**, Tracking Service, 802.3at PSE Conformance Suite for One Year for One PSA Controller
- PSA-TS2**, Tracking Service, 802.3at PSE Conformance Suite for Two Years for One PSA Controller
- PSA-QTD**, PowerSync Analyzer Test Suite RackPack (e.g. PSA-3248) Discount

**\*NOTE:** PSA-CT requires one or more **PSA-3x02** test blades, **PSA-3x48** RackPack, or **PSA-3x02** Compact PSA

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Learn MORE about the PSE Conformance Test Suite.  
See the **PSE Conformance Test Suite Demo**  
video presentation at [www.sifos.com](http://www.sifos.com).

**Verification, Simplified.**

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