PSA 5.2.00 Release Notes

The PSA **5.2.00** Release Note is applicable to the PSA-3000 and PVA-3000 family of test instruments.

Highlights

With the PSA 5.2.00 release, Sifos is pleased to release the 4-Pair 802.3bt PSE Conformance Test Suite to all PSA-3000 customers. Previously, PSA 5.1.xx versions of the 4-Pair test suite were only available to Beta Site customers.

As part of the PSA 5.2.00 release, Sifos has published a new datasheet for the 4-Pair PSE Conformance Test Suite (**PSE 4-Pair Conformance Test Suite Overview.pdf**) available from the Sifos website. Additionally, the LLDP Emulation and Analysis datasheet was re-written to encompass all of 802.3bt (**LLDP Emulation & Analysis for the PowerSync Analyzer.pdf**) and is also available from the website.

The 4-Pair PSE Conformance Test Suite is a very large and sophisticated application built on top of **PowerShell PSA version 5** and the PSA-3202 / PSA-3402 PowerSync Analyzer. Using the same testing resources, users can now readily rotate between testing 2-Pair and 4-Pair PSE's for 802.3at and 802.3bt specification conformance. The following table outlines some differences the IEEE 802.3at and the IEEE 802.3bt specifications.

	802.3at	802.3bt
PSE State Machine Pages	4	31
PD/PSE Types	2	2
PSE Port Powering Tiers	2	6
PD Classes	5	13
PD Power Demotion Permutations	1	27
PoE LLDP Protocol Versions	1	2

The obvious increased complexity presented by 4-Pair 802.3bt PSE's demands a much more comprehensive and complex test suite as illustrated by the following table.

	2-Pair Suite	4-Pair Suite
Number of Tests on 1 PSE Port	21	24*
Maximum Possible Tested Parameters on 1 PSE Port	90	333
Maximum Possible Non-LLDP Tested Parameters on 1 PSE Port	79	299

* A future 25th test will cover PSE autoclass behavior.

The PSA 5.2.00 release incorporates enhancements that affect all PSA/PSL/PVA-3000 test instruments and associated software and is therefore highly recommended to users of all those products.

ALC Firmware Update

ALC firmware update version 18 is a non-essential but recommended update for all PSA-3202 and PSA-3402 test ports. Version 18 addresses several low probability vulnerabilities to rapid and unexpected PSE voltage glitches that could possibly impair PSE port power-ups. See **PSA-3202/PSL-3202/PSA-3402 ALC Version 18 Update** near the end of this Release Note.

PSA 5.2.00 Release Notes

PSE Conformance Test Suite Tracking Service

When installing 5.2.00 software, customers who are licensed for the **2-Pair** (formerly 802.3at) PSE Conformance Test Suite and are active on Conformance Test Suite Tracking Service must enter the **2Pair CTS Key** in order to retain the PSE Conformance Test Suite after the software update. Customers who are licensed for the **4-Pair** test suite must enter the **4Pair CTS Key** to maintain that test suite.

Both Product Keys are revised relative to earlier 5.1.xx releases and may be obtained by registering / logging into the Sifos website for product downloads.   Customers who are active on Conformance Test Suite Tracking Service and have accounts at www.sifos.com may obtain product keys from the Product Download area.

PSA 5.2.00 Enhancements

Software Entity	Impact	Feature
4-Pair PSE Conformance Test Suite	Moderate	A series of enhancements were made to detection waveform signal processing utilities to: 1) Better adapt to noise and short impulses discovered during detection steps 2) Better adapt to more complex connection check signaling cases
	Moderate	**class_response** was modified to: 1) Adapt to a 2-pair (Class 3 or Class 4) power-up of a single signature PD where classification is performed on the opposite pairset from the powering pairset 2) More reliably discern if PSE's support 2-pair powering to 2-pair PD's on one or both pairsets.
	Moderate	**pwrup_time** was enhanced in several ways: 1) Corrected a vulnerability in **Tpon** analysis where a longer Tme2 (> 25 msec) could lead to erroneous **Tpon** outcome 2) Also adjusted signal processing to better deal with very short final mark (Tme2) intervals down to 5 msec 3) Added waveform retention when **Tpon** waveform analysis runs into an error condition 4) Adapt **Trise** measurement to a PSE port that fails to power both pairsets given a Class 4D signature 5) Adjusted the Single Signature power stagger measurement to use slightly lower load to assure no infringement to a marginal Icut threshold 6) Increased time tolerance for power-up associated with **Tpon** measurements to help with certain system PSE's
	Minor	Modified utility that scans for maximum assigned class to perform one re-try to a single signature emulation where the maximum assigned class is deemed to be class 3 (single event).
	Minor	**det_time** modified to retain detection waveforms in cases where the signal processing of detection produces an error.

Software Entity	Impact	Feature
	Minor	**cc_response** modified to: 1) Allow PSE's following the burst of dual signature power-ups more "recovery" time going into the 2-Pair PD connections 2) Follow attempted 2-Pair PD power-ups to LLDP granting (system) PSE's with a recovery opportunity to get LLDP properly reset
	Minor	**pwron_maxi** modified to 1) Allow for a PSE declared as Type-4 that might not grant more than Class 6 power but should still be tested to Type-4 upperbound current ranges 2) Allow (system) PSE's more time to recover from prior overload shutdowns
	Minor	**mps_dc_valid**: Several refinements were made to more reliably recognize and process PSE's that drop one pairset during low power conditions to Class 3 (and Class 4) PD's.
	Minor	**pwrdn_v** modified to search for both LCE and non-LCE class pulses when no power-up is present in the 5 second trace
	Minor	Several test adapted to overcome rare ALC firmware anomalies for ALC versions 17 and lower. (*ALC version 18 corrects these inside the ALC itself*.)
	Minor	Standard 4-Pair Test Report: 1) Modified standard report to add conditional maximum limits to 6 of the parameters in **class_response** that should be restricted according to the PSE Type (3 vs 4) 2) Revised **Vdiff** test limit in **pwron_v** upward to allow for more realistic voltage error tolerances across PSA-3202 test ports 3) Set a minimum limit for **Tpon** based on minimum Tlce and mark time for single event classification
One-Click Waveforms	Moderate	**Error Delay** waveform modified to get reliable overload shutdowns with all PSE's supporting Class 7, 8, and Dual Class 5.
	Moderate	**Detect** waveform modified to retain incoming waveforms when problems develop producing the 'det_cycle' version used in PSE conformance testing.
	Minor	**Peak Transient** and **Short Circuit** waveforms adapted to overcome rare ALC firmware anomalies for ALC versions 17 and lower. (ALC version 18 corrects these inside the ALC itself.)
	Minor	**Detect** waveform processing for connection check enhanced to better tolerate longer pre-CC pulses and to better sort out overlapped detection pulses.
PSA Interactive	Important	Modified the relation between PSE attributes and the LLDP tab menu so that AT LLDP protocol can be specified when testing any Type-3/4 PSE with Type-1/2 PD emulations.

Software Entity	Impact	Feature
	Moderate	Modified Power Up tab menu to support event counting with PD emulations for Class 1 – 4.
	Moderate	Modified the LLDP tab menu so that an LLDP trace can be collected from a Type-3, 2-Pair PSE powering a Single Signature Type-3/4 (Class 5-8) PD.
	Minor	Modified the LLDP tab menu such that when the Adjust & Maintain trace type is selected, emulated PD type and class cannot be altered because PSE port has already completed the power-up negotiation.
LLDP Emulation & Analysis	Important	Revised the LLDP traces to remove some loop pacing delays that could cause an LLDP trace to miss a PSE LLDP message if the PSE sent messages quickly (back-to-back).
	Moderate	Revised the LLDP traces (power-up and power-adjust) to always require BOTH PD Class and PD Power Request in order to simplify logic and improve overall reliability of the trace utilities.
	Minor	Modified the PSE tab menu to check powering status of a PSE port, and to remove power if active, prior to allowing Apply Settings button to change 4-Pair states of the test port.
PowerShell PSA	Moderate	When connecting to PSA's that are licensed for one or both PSE Conformance Test Suites, PowerShell PSA will make a best guess at which test suite to install based upon a number of factors and will now annunciate the user. Users may always alter this using PSE Attribute files or associated PSE attribute settings.
	Moderate	**power_bt** enhanced to enable autoclass and event counting for PD class emulations 1-4.
	Minor	**power_bt** enhanced to reduce Class 3 maximum possible post-inrush load current to staggered power-ups to keep this below the lowest possible Pcut / Icut level.
	Minor	**psa_latency_test** adapted to run properly when one or more PSA ports are in a 4-Pair state.

PSA 5.1.06 Bug Fixes

Software Entity	Impact	Feature
4-Pair PSE Conformance Test Suite	Important	Corrected problem where **pwron_overld** was not always removing power upon completion of the test. This could result in multiple PSE ports being powered going into the next (**mps_dc_valid**) test during a sequence across multiple ports.
	Minor	**pwron_pwrcap**: Solved a vulnerability to error when a PSE fails to power either pairset of a dual signature PD
	Minor	Standard 4-Pair Test Report: 1) Removed all unintended references to 802.3at in the standard 4-Pair test report 2) Added tables under the Limits table to explain Interop and

Software Entity	Impact	Feature
		Safety weighting scales 3) Corrected descriptions of Uneven Class parameters in the class_err test in the Notes tab 4) Corrected defect in placement of PSA model and minimum firmware version in Limits tab header
PSA Interactive	Minor	Decoupled PD Type/Class selection between the LLDP tab menu and the Power Up and Waveforms tab menus. This was necessary because the LLDP tab menu does not support a PD Type= PD4 (dual class 4) thus leading to no selection in the LLDP menu.
LLDP Emulation & Analysis	Important	Corrected problem with LLDP power-up traces where the reported PSE Echo Time was not properly determined and could be reported as much longer than actual thus causing false parameter failures in the report header.
	Important	Corrected a problem where the initial echo of a PSE allocated power could deviate from the value in the first message provided by the PSE. This would then delay synchronization between PSE and PSA/PSL test port and could also lead to rapid fire messaging from the PSE.
	Minor	Corrected extraneous conditional formatting logic in lower rows of the standard 802.3at trace report
PowerShell PSA	Minor	psa_pse: Solved an issue where under some circumstances, software might not install the appropriate (2-Pair vs 4-Pair) PSE conformance test suite when PSE attributes are loaded.

PSA/PVA Firmware Versions

PSA 5.1 software requires certain minimum versions of PSA/PSL test port firmware. The following versions are the current versions for each product. Sifos recommends updating firmware to these.

PSA-3000 Controller: ver **3.18** **PSA-3402 Controller**: ver **3.18**	**PSA-3202**, **PSL-3202** , **PSA-3402**: Test Port ver **4.17**, ALC ver **18**
PSA/PSL-3102 or **PSA-3002** Test Port ver **3.2B**	**PVA-3102** Test Port ver **3.0B**

Important! **PSA-3000 Controller** firmware **3.18** or later is required in order for PSA 5.1 software to speed up host-to-test-port communications. Without this firmware version, there will be no change in communications bandwidth.

Important! The **4-Pair** PSE Conformance Test Suite requires PSA-3202 firmware version **4.14** or later. This version implements a trace capture feature that enables better resolution of PSE classification timing. Version **4.17** is recommended.

Important! PSx-**3202** firmware **4.17** or later and PSx-**3102** firmware **3.2B** addresses an extremely subtle and rare problem that develops when running PSE conformance tests with **LLDP power-granting**

PSA 5.2.00 Release Notes

PSE's. The problem can manifest as either an I/O timeout to the PSA instrument or as an LLDP LAN interface that fails to auto-negotiate with the PSE port under test. Only PSx-3202 and PSx-3102 **hardware versions 8** and **9** are impacted by this problem.   These versions also address another rare problem that manifests in the **pwruptrace** meter used by the **2-Pair PSE Conformance Test Suite** where early portions of a voltage trace may have corrupted values.

PSA-3202/PSL-3202/PSA-3402 ALC Version 18 Update

The ALC firmware within a PSA-3202/PSL-3202/PSA-3402 is a vital element affecting the instrument's ability to reliably emulate all **802.3bt** PD's and to test **802.3bt** PSE's under a wide variety of conditions. The current version of ALC firmware is **version 18**.   Any instruments that are used for 802.3bt PSE testing either now or in the future <u>should be updated</u> to this version.

To examine current ALC firmware version, simply open **PowerShell Tcl** or **Wish** and execute the command:

psa_config -alc

ALC Version 18 Update Instructions

Updating any PSA/PSL test instrument to ALC version 18 is a very simple task.   However, it should be performed when the instrument is not needed for a while as it may take from 3 to 10 minutes PER TEST PORT to complete.   It is recommended to simply run this update overnight from a PC that is not busy performing other tasks.

To perform the ALC version 18 update to all PSA/PSL-3202 test ports:

<u>After installing PSA version 5.2.00 software</u>, open PowerShell (Wish or Tcl), connect to instrument that will be updated, and execute:

alc_updater_18

When the update is completed, look for the indication:

alc_updater_18: UPDATES COMPLETED !!!!

Ports **** Updated Successfully!