802.3at PD PICS Coverage

Sifos® Technologies

Item	Topic	802.3at Paragraph	PDA-602A[1] Coverage	Value/Comment	Associated Method
PD1	Accept power	33.3.1	COVERED	On either set of PI conductors	Inherently covered by ALT-A and Alt-B tests
PD2	Polarity insensitive	33.3.1	COVERED	Both Mode A and Mode B per Table 33–13	Inherently covered by MDI and MDI-X tests
PD3	Source power	33.3.1	PARTIAL COVERAGE	The PD does not source power on its PI	Voltage measured on PI
PD4	Voltage tolerance	33.3.1	COVERED	Withstand 0 V to 57 V at the PI indefinitely without permanent damage	Load Meter / Load Monitor Assessments
PD5	Underpowered Type 2 PD	33.3.2	COVERED	If PD does not successfully observe 2-Event Physical Layer classification or Data Link Layer classification, conforms to Type 1 PD power restrictions and provides the user with an active indication if underpowered	802.3at Test: **Pclass_PD_1, Ppeak_PD_1, P_type-1**; PDA-602A LLDP
PD6	Current unbalance	33.3.2		Type 2 PDs meet the requirements	*Not Tested*
PD7	PD behavior	33.3.3	COVERED	According to state diagram shown in Figure 33–16	802.3at Test: **R_detect, I_class, Pclass_PD_1, P_type-1, Pclass_PD_2**
PD8	Valid and non-valid detection signatures	33.3.4	COVERED	Presented between positive VPD and negative VPD on each set of pairs defined in 33.3.1	802.3at Test: **R_detect, C_detect** (4 quadrant)
PD9	Non-valid detection signature	33.3.4	COVERED	When powered, present an invalid signature on the set of pairs not drawing power	*PDA-300 Not Tested*; PDA-602A Rdet Unpwr
PD10	Valid detection signature	33.3.4	PARTIAL COVERAGE	Characteristics defined in Table 33-14	802.3at Test: **R_detect, C_detect** (4 quadrant). *R_Detect is limited to 4V, 8V VPD, C_Detect test initiated at 5V VPD. V_Offset, PI Voltage, and Inductance are Not Tested*
PD11	Non-valid detection signature	33.3.4	COVERED	Exhibit one or both of the characteristics described in Table 33–15	802.3at Test: **R_detect, C_detect** (4 quadrant)
PD12	PD classifications	33.3.5	COVERED	Meets at least one permutation listed in Table 33–8	802.3at Test: **I_Class, Class**
PD13	PD implementing 2-Event class signature	33.3.5.1	COVERED	Returns Class 4	802.3at Test: **I_Class, Class**
PD14	Type 2 PD classification behavior	33.3.5.1	PARTIAL COVERAGE	Conforms to electrical specifications in Table 33–17	802.3at Test: **I_Class, Class, I_Mark** (*Thresholds and Vreset are not tested*)
PD15	Classification signature	33.3.5.1	COVERED	As defined in Table 33–16	802.3at Test: **I_Class**
PD16	Classification signature	33.3.5.1	COVERED	One classification signature during classification	*Not Tested*; PDA-602A Class Stability
PD17	2-Event class signature	33.3.5.2	COVERED	Class 4 in accordance with the maximum power draw as specified in Table 33–18	802.3at Test: **I_Class, Class, Pclass_PD_2, Ppeak_PD_2, P_type1**
PD18	2-Event class signature behavior	33.3.5.2	COVERED	As defined in Table 33–17	802.3at Test: **I_Class, I_Mark, Class, Pclass_PD_2, Ppeak_PD_2, P_type1**
PD19	Type 2 PD electrical requirements	33.3.5.2	PARTIAL COVERAGE	As defined by Table 33–18 of the Type defined in its pse_power_type state variable	802.3at Test: **I_Class, Class, Pclass_PD_2, Ppeak_PD_2, P_type1**; PDA602A Noise/Ripple<25kHz.
PD20	Mark event current and 2-Event class signature	33.3.5.2.1	COVERED	Draw IMark and present a nonvalid detection signature as defined in Table 33–15	802.3at Test: **I_Mark** (nonvalid detection signature is implicit in I_Mark test)
PD21	Mark event current limits	33.3.5.2.1	COVERED	Not exceed IMark when voltage at the PI enters VMark as defined in Table 33–17	802.3at Test: **I_Mark**
PD22	PD current draw	33.3.5.2.1	COVERED	IMark until the PD transitions from DO_MARK_EVENT state to the IDLE state	*PDA-300 Not Tested*; PDA-602A Itrace
PD23	PSE identification	33.3.6	COVERED	Identify as Type 1 or Type 2 (see Figure 33–16)	802.3at Test: **I_Class, Class, Pclass_PD_1, Pclass_PD_2, P_type1** (*LLDP identifcation not included*)
PD24	PD power supply	33.3.7	PARTIAL COVERAGE	Operate within the characteristics in Table 33–18 **Table Includes tests PD25 through PD43**	See PD25-PD43
PD25	PD turn on voltage	33.3.7.1	COVERED	PD turns on at a voltage less than or equal to Von	802.3at Test: **V_on**
PD26	PD stay on voltage	33.3.7.1	COVERED	Stay on for all voltages in the range of VPort_PD	Load Meter / Load Monitor Assessments
PD27	PD turn off voltage	33.3.7.1	COVERED	Turn off at a voltage less than VPort_PD min and greater than Voff	802.3at Test: **V_off**
PD28	Startup oscillations	33.3.7.1	COVERED	Shall turn on or off without startup oscillations and within the first trial at any load value	Load Meter / Load Monitor Assessments
PD29	PPort_PD definition	33.3.7.2.1	COVERED	When PD is fed by VPort_PD min to VPort_PD max with RCh (as defined in Table 33–1) in series	All PDA-300 Testing Performed At Minimum Cable Distance from PD
PD30	Type 2 PD input inrush current	33.3.7.3	COVERED	With pse_power_type state set to 2 prior to power-on, operate as a Type 1 PD for at least Tdelay min	802.3at Test: **P_Type_1, Inrush_E**
PD31	Input inrush current	33.3.7.3	COVERED	Limited by the PD if Cport is greater than or equal to 180 μF so that IInrush_PD max is satisfied.	802.3at Test: **PDA_300 Inrush_E** (*Cport is not tested, Inrush_E approximates Inrush using Capacitive charging energy (Watt-sec) over worst 20ms sub-interval of Iinrush interval*); PDA-602A Itrace
PD32	Peak power	33.3.7.4	COVERED	Not to exceed PClass_PD max for more than TCUT min and 5% duty cycle	802.3at Test: **Ppeak_PD_1, Ppeak_PD_2**. Load Meter provides test capability over user-controlled durations. (*PDA-300 5% Duty Cycle is not tested; PDA-602A tested*)
PD33	Peak operating power	33.3.7.4	COVERED	Not to exceed Ppeak max	802.3at Test: **Ppeak_PD_1, Ppeak_PD_2**. Load Monitor provides test capability over user-controlled durations. (*PDA-300 5% Duty Cycle is not tested; PDA-602A tested*)
PD34	RMS, DC, and ripple current	33.3.7.4	PARTIAL COVERAGE	Bounded by Equation (33–10)	802.3at Test: **Max_Load_1, Max_Load_2** (*These are peak current levels.*); PDA-602A trace, <25kHz
PD35	Maximum IPort for all operating VPort_PD	33.3.7.4	COVERED	Defined by Equation (33–11)	802.3at Test: **Max_Load_1, Max_Load_2**
PD36	Peak transient current	33.3.7.5		Not to exceed 4.70 mA/μs in either polarity	*Not Tested*
PD37	Specifications for IPDUT	33.3.7.5	COVERED	Operate below upperbound template defined in Figure 33–18	802.3at Test: **Pclass_PD_1, Pclass_PD_1, Ppeak_PD_1, Ppeak_PD_2**
PD38	Behavior during transients at the PSE PI	33.3.7.6		As specified in 33.3.7.6	*Not Tested*
PD39	Ripple and noise	33.3.7.7		As specified in Table 33–18 for the common-mode and/or differential pair-to-pair noise at the PD PI	*Not Tested*
PD40	Ripple and noise specification	33.3.7.7		For all operating voltages in the range defined by VPort_PD in Table 33–18	*Not Tested*
PD41	Ripple and noise presence	33.3.7.7		Operates in the presence of ripple and noise generated by the PSE that appears at the PD PI	*Not Tested*
PD42	Classification stability	33.3.7.8	COVERED	Class signature valid within Tclass and remains valid for the duration of the classification period	*PDA-300 Not Tested*; PDA-602A Class Stability
PD43	Backfeed voltage	33.3.7.9	COVERED	Mode A and Mode B per 33.3.7.9	*PDA-300 Not Tested*; PDA-602A Vbfd
PD44	Maintain power signature	33.3.8	COVERED	PD provides a valid MPS at the PI as defined in 33.3.8	802.3at Test: **MPS_Load_1, MPS_Load_2**
PD45	No longer require power	33.3.8	COVERED	Remove both components of the Maintain Power Signature	Load Meter / Load Monitor Assessments
COM1	Compatability Considerations	33.1.2	COVERED	PDs and PSEs compatible at their Pls.	802.3at Test
DLL1	Reserved Fields	33.6	COVERED	Reserved fields in Power via Mdi TLV transmitted as zeros and ignored on receipt.	802.3at Power On LLDP Test, LLDP trace
DLL2	Data Link Layer classification standards compliance	33.6.1	COVERED	Meet mandatory parts of IEEE Std 802.1AB-2009	LLDP trace
DLL3	TLV frame definitions	33.6.1	COVERED	Meet requirements for Type, Length, and Value (TLV) defined in 79.3.2	LLDP trace
DLL4	Control State Diagrams	33.6.1	COVERED	Meet state diagrams defined in 33.6.3	LLDP trace
DLL7	PD Data Link Layer classification ready	33.6.2	PARTIAL COVERAGE	Set state variable pd_dll_ready within 5 minutes of Data Link Layer classification being enabled as indicated by pd_dll_enabled.	Inferred from LLDP trace behavior (no external access to variables internal to PD implementation).
DLL9	PSE allocated power value change	33.6.2	COVERED	LLDPDU with updated "PD requested power value" field sent within 10 seconds	802.3at Power On LLDP Test, LLDP trace
DLL11	PD power control state diagrams	33.6.3	COVERED	Meet the behavior shown in Figure 33-28	802.3at Power On LLDP Test, LLDP trace
PVT1	MDI power capabilities field	79.3.2.1	COVERED	Bit map of the MDI power capabilities and status as defined in Table 79–2	LLDP trace
PVT4	Power type/source/priority field	79.3.2.4	COVERED	Contains a bit-map of the power type, source, and priority defined in Table 79–3a	LLDP trace
PVT5	Power type field	79.3.2.4.1	COVERED	Set according to Table 79–3a	LLDP trace
PVT6	Power source field when power type is PD	79.3.2.4.2	COVERED	Set to '01' when powered only through the PI; set to '11' when powered from both; set to '00' when information is not available	LLDP trace
PVT8	Power priority field when power type is PD	79.3.2.4.3	COVERED	Set to the power priority configured for the device; set to '00' if power priority is undetermined	LLDP trace
PVT9	PD requested power value field	79.3.2.5	COVERED	Contains the PD's requested power value defined in Table 79–3b	LLDP trace
PVT10	PSE allocated power value field	79.3.2.6	COVERED	Contains the PSE's allocated power value defined in Table 79–3c	LLDP trace
PVT11	Usage rules	79.3.2.7	COVERED	LLDPDU contains no more than one Power Via MDI TLV	LLDP trace

[1] The PDA-602A may require one or more optional features to provide all coverages claimed.

Verification, Simplified.