

# PDA-600 BT TEST REPORT

December 2, 2021 2:27 PM

Coverage: ALT A MDI-X Type3 Phy

Software Version: 2.3.0.2



Product Tested: Cycles: 1

Color Key: ALT B MDI Type4 Phy

PDA Firmware: 2.08

Report Ver: 3.5

Sample Class 6 PD With LLDP

PASS FAIL WARN INFO

Serial Number 604A0001

## Detection

Det\_Cycles: 3

Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
SigType		SINGLE	-	-	-	-	SINGLE	SINGLE	P
Rdet_A		25.43	kohm	25.43	25.43	25.43	23.70	26.30	P
Rdet_final_A		25.41	kohm	25.41	25.41	25.41	23.70	26.30	P
Rdet_unpwr_A		>99.00	kohm	99.00	99.00	99.00	<12.00	>45.00	P
Rdet_at_Vmin_A		25.05	kohm	25.05	25.05	25.05	23.70	26.30	P
Rdet_at_Vmax_A		25.39	kohm	25.39	25.39	25.39	23.70	26.30	P
Rdet_Voffset_A		1.0	VDC	1.0	1.0	1.0	0.0	1.9	P
Cdet_A		0.10	uF	0.10	0.10	0.10	0.05	0.12	P
Cdet_final_A		0.10	uF	0.10	0.10	0.10	0.05	0.12	P
Rdet_B		25.47	kohm	25.47	25.47	25.47	23.70	26.30	P
Rdet_final_B		25.47	kohm	25.47	25.47	25.47	23.70	26.30	P
Rdet_unpwr_B		>99.00	kohm	99.00	99.00	99.00	<12.00	>45.00	P
Rdet_at_Vmin_B		25.33	kohm	25.33	25.33	25.33	23.70	26.30	P
Rdet_at_Vmax_B		25.57	kohm	25.57	25.57	25.57	23.70	26.30	P
Rdet_Voffset_B		1.0	VDC	1.0	1.0	1.0	0.0	1.9	P
Cdet_B		0.10	uF	0.10	0.10	0.10	0.05	0.12	P
Cdet_final_B		0.10	uF	0.10	0.10	0.10	0.05	0.12	P

## Classification

ClassNum_A		6		6	6	-	6	6	P
class_sig_EV1-2_min_A		40.7	mA	40.7	40.7	40.7	36.0	44.0	P
class_sig_EV1-2_max_A		41.2	mA	41.2	41.2	41.2	36.0	44.0	P
class_sig_EV3-5_min_A		11.2	mA	11.2	11.2	11.2	9.0	12.0	P
class_sig_EV3-5_max_A		11.8	mA	11.8	11.8	11.8	9.0	12.0	P
MarkI_A		2.14	mA	2.14	2.14	2.14	0.25	4.00	P
Tclass_max_A		0.2	ms	0.2	0.2	0.2	0.2	5.0	P
Iclass_EV1_at_Vmin_A		39.2	mA	39.2	39.2	39.2	36.0	44.0	P
Iclass_EV1_at_Vmax_A		40.7	mA	40.7	40.7	40.7	36.0	44.0	P
Class_Reset_A		1		1	1	-	1	1	P
Autoclass		0		0	0	-	0	0	P
Tacs		0.0	ms	0.0	0.0	0.0	0.0	0.0	P
ClassNum_B		6		6	6	-	6	6	P
class_sig_EV1-2_min_B		40.3	mA	40.3	40.3	40.3	36.0	44.0	P
class_sig_EV1-2_max_B		40.7	mA	40.7	40.7	40.7	36.0	44.0	P
class_sig_EV3-5_min_B		10.4	mA	10.4	10.4	10.4	9.0	12.0	P
class_sig_EV3-5_max_B		11.4	mA	11.4	11.4	11.4	9.0	12.0	P
MarkI_B		2.16	mA	2.16	2.16	2.16	0.25	4.00	P
Tclass_max_B		0.2	ms	0.2	0.2	0.2	0.2	5.0	P
Iclass_EV1_at_Vmin_B		39.4	mA	39.4	39.4	39.4	36.0	44.0	P
Iclass_EV1_at_Vmax_B		40.3	mA	40.3	40.3	40.3	36.0	44.0	P
Class_Reset_B		1		1	1	-	1	1	P

## Power-Up / Down

Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
linrush_init		834.5	mA	834.5	834.5	834.5	0.0	400.0	INFO
linrush_tdel		78.900	mA	78.9	78.9	78.9	0.0	256.8	P
Tinrush		73.7	ms	73.7	73.7	73.7	0.0	50.0	F
linrush_init_A		417.1	mA	417.1	417.1	417.1	0.0	400.0	INFO
linrush_tdel_A		39.800	mA	39.8	39.8	39.8	0.0	256.8	P
Tinrush_A		50.0	ms	50.0	50.0	50.0	0.0	50.0	P
linrush_init_B		417.7	mA	417.7	417.7	417.7	0.0	400.0	INFO
linrush_tdel_B		39.400	mA	39.4	39.4	39.4	0.0	256.8	P
Tinrush_B		50.0	ms	50.0	50.0	50.0	0.0	50.0	P
IlimMinViolation		0		0	0	-	0	0	P
Vrefl_A		1.3	VDC	1.3	1.3	1.3	0.0	2.8	P
Vrefl_B		1.4	VDC	1.4	1.4	1.4	0.0	2.8	P
Von		37.0	VDC	37.0	37.0	37.0	30.0	42.0	P
Voff		33.5	VDC	33.5	33.5	33.5	30.0	42.0	P
Vhyst		3.5	VDC	3.5	3.5	3.5	1.4	12.0	INFO

## 2 Pair Powered Type-1 PHY

PSE Emulation: On Time: 30 sec Off Time: 10 sec Vport: 56.0

Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
Min_1		40.3	mA	40.3	40.3	40.3	0.0	258.5	P
Vport_1		55.7	VDC	55.7	55.7	55.7	37.0	57.0	INFO
Ppeak_1		15.61	W	15.61	15.61	15.61	0.0	14.4	F
Pport_1		12.19	W	12.19	12.19	12.19	0.0	13.0	P
PeakViolation_1		1		1	1	-	0	0	F
MPSViolation_1		0		0	0	-	0	0	P
TcutWindowViolation_1		0		0	0	-	0	0	P
DutyCycleViolation_1		0		0	0	-	0	0	P

## 2 Pair Powered Type-3 PHY

PSE Emulation: On Time: 90 sec Off Time: 10 sec Vport: 43.5

Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
Min_2		39.7	mA	39.7	39.7	39.7	0.0	662.9	P
Vport_2		42.7	VDC	42.7	42.7	42.7	42.5	57.0	INFO
Ppeak_2		29.21	W	29.21	29.21	29.21	0.0	28.3	F

Pport_2	24.45	W	24.45	24.45	24.45	0.0	25.5	P	
PeakViolation_2	1		1	1	-	0	0	F	
MPSViolation_2	0		0	0	-	0	0	P	
TcutWindowViolation_2	0		0	0	-	0	0	P	
DutyCycleViolation_2	0		0	0	-	0	0	P	
<b>4 Pair Powered Type-3 PHY</b>		PSE Emulation:		On Time:	60 sec	Off Time:	10 sec	Vport:	43.5
Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
MinI_3	76.4	mA	76.4	76.4	76.4	76.4	0.0	1257.1	P
Vport-2P_3_A	42.5	VDC	42.5	42.5	42.5	42.5	42.5	57.0	INFO
Vport-2P_3_B	42.4	VDC	42.4	42.4	42.4	42.4	42.5	57.0	INFO
Ppeak_3	54.51	W	54.51	54.51	54.51	54.51	0.0	53.5	F
Pport_3	50.06	W	50.06	50.06	50.06	50.06	0.0	51.0	P
PeakViolation_3	1		1	1	-	0	0	F	
MPSViolation_3	0		0	0	-	0	0	P	
TcutWindowViolation_3	0		0	0	-	0	0	P	
DutyCycleViolation_3	0		0	0	-	0	0	P	
<b>4 Pair Powered Type-4 PHY</b>		PSE Emulation:		On Time:	60 sec	Off Time:	10 sec	Vport:	43.5
Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
<b>4 Pair Powered LLDP</b>		PSE Emulation:		On Time:	60 sec	Off Time:	10 sec	Vport:	52.0
Parameter	Cycle:	1	Units	Min.	Max.	Average	Low Lim.	High Lim.	P/F
MinI_PreAlloc	76.4	mA	76.4	76.4	76.4	76.4	0.0	277.9	P
Vport-2P_PreAlloc_A	51.8	VDC	51.8	51.8	51.8	51.8	39.9	57.0	INFO
Vport-2P_PreAlloc_B	51.7	VDC	51.7	51.7	51.7	51.7	39.9	57.0	INFO
Ppeak_PreAlloc	12.09	W	12.09	12.09	12.09	12.09	0.0	14.4	P
Pport_PreAlloc	12.04	W	12.04	12.04	12.04	12.04	0.0	13.0	P
PeakViolation_PreAlloc	0		0	0	-	0	0	0	P
MPSViolation_PreAlloc	0		0	0	-	0	0	0	P
TcutWindowViolation_PreAlloc	0		0	0	-	0	0	0	P
DutyCycleViolation_PreAlloc	0		0	0	-	0	0	0	P
MinI_PostAlloc	231.4	mA	231.4	231.4	231.4	231.4	0.0	1045.0	P
Vport-2P_PostAlloc_A	51.2	VDC	51.2	51.2	51.2	51.2	42.5	57.0	INFO
Vport-2P_PostAlloc_B	51.1	VDC	51.1	51.1	51.1	51.1	42.5	57.0	INFO
Ppeak_PostAlloc	54.36	W	54.36	54.36	54.36	54.36	0.0	53.5	F
Pport_PostAlloc	49.88	W	49.88	49.88	49.88	49.88	0.0	51.0	P
PeakViolation_PostAlloc	1		1	1	-	0	0	0	F
MPSViolation_PostAlloc	0		0	0	-	0	0	0	P
TcutWindowViolation_PostAlloc	0		0	0	-	0	0	0	P
DutyCycleViolation_PostAlloc	0		0	0	-	0	0	0	P

**PD Conformance Test Suite Parameters**

Note: the parameter suffix '\_x' indicates this value is independently measured for Alt A and Alt B. The reported parameters will use the suffix '\_A' or '\_B'.

Parameter	Description	Units	Acceptance Criteria (802.3bt references)	PICS
<b>Detection</b>				
Rdet_x	Detection resistance ( $V_{PD}$ in 2.7 to 10.1 V range) from a single probe.	k $\Omega$	23.7 to 26.3 k $\Omega$	PD2 PD9 PD10 PD11 PD12 PD13 PD14 PD15 PD16 PD17 PD18 PD19
Rdet_final_x	Detection resistance after multiple detection and classification probing sequences. Evaluate response to PSE's that probe repeatedly prior to power-up.		802.3bt Table 145-21	
Rdet_unpwr_x	Non-valid detection resistance presented by the unpowered pairset of a Single signature PD.	k $\Omega$	< 12 or > 45 k $\Omega$ 802.3bt section 145.3.4, Table 145-22	
Rdet_at_Vmin_x	Detection resistance measured using the chord $V_{PD} = 2.7$ to 4.2 V.	k $\Omega$	23.7 to 26.3 k $\Omega$	
Rdet_at_Vmax_x	Detection resistance measured using the chord $V_{PD} = 7.0$ to 10.0 V.		802.3bt Table 145-21	
Rdet_Voffset_x	PD detection signature offset.	VDC	0 to 1.9 VDC 802.3bt Table 145-21, Figure 145-29	
SigType	PD signature type.	-	SINGLE or DUAL (user declaration) 802.3bt section 145.3.5	
Cdet_x	Detection capacitance ( $V_{PD}$ in 2.7 to 10.1 V range)	$\mu$ F	0.05 to 0.12 $\mu$ F	
Cdet_final_x	Detection capacitance after multiple detection and classification probing sequences. Evaluate response to PSE's that probe repeatedly prior to power-up.		802.3bt Table 145-21	
<b>Classification</b>				
ClassNum	PD Class determined from a 5 Event classification.	PD Class	1, 2, 3, 4, 5, 6, 7, 8 (SINGLE sig.) (user declaration) 1D, 2D, 3D, 4D, 5D (DUAL sig.) (user declaration) 802.3bt section 145.3.6, Tables 145-26 and 145-27	PD22 PD24 PD25 PD27 PD28 PD29 PD30 PD31 PD32 PD33 PD34 PD35
ClassNum_x				
class_sig_EV1-2_min	Minimum current drawn during Event 1 or 2 (class_sig_A).	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24	
class_sig_EV1-2_min_x				
class_sig_EV1-2_max	Maximum current drawn during Event 1 or 2 (class_sig_A).	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24	
class_sig_EV1-2_max_x				
class_sig_EV3-5_min	Minimum current drawn during Event 3, 4, or 5 (class_sig_B).	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24	
class_sig_EV3-5_min_x				
class_sig_EV3-5_max	Maximum current drawn during Event 3, 4, or 5 (class_sig_B).	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24	
class_sig_EV3-5_max_x				
MarkI	Current drawn during mark region of a 2-Event...5-Event classification.	mA	0.25 to 4 mA 802.3bt Table 145-25	
MarkI_x				
Tclass_max	Time from when $V_{PD} = 15.5$ VDC until class current reaches valid level. Maximum of the times observed for Events 1..5.	ms	< 5.0 ms 802.3bt 145.3.6.1 & Table 145-25	
Iclass_EV1_at_Vmin	Classification current signature at $V_{Class\_PD} = 14.5$ V. (single event)	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24, Table 145-25	
Iclass_EV1_at_Vmin_x				
Iclass_EV1_at_Vmax	Classification current signature at $V_{Class\_PD} = 20.5$ V. (single event)	mA	1-4, 9-12, 17-20, 26-30, or 36-44 802.3bt Table 145-24, Table 145-25	
Iclass_EV1_at_Vmax_x				
Class_Reset	Flag indicating PD correctly reverted to IDLE and presented the expected class signatures class_sig_A and class_sig_B following $V_{PD} < V_{Reset\_th}$ .	flag (1 or 0)	A value of 1 indicates PD correctly reset. 802.3bt section 145.3.6.1.1	
Class_Reset_x				
Autoclass	Flag indicating PD class signature behavior during Event 1 matches user declaration. (optional behavior, SINGLE sig. PDs only)	flag (1 or 0)	P or F based on PD behavior vs. user declaration. 802.3bt section 145.3.6.2	
Tacs	Time during Event 1 that the PD changes to class signature 0. (optional behavior, SINGLE sig. PDs only)	ms	75.5 to 87.5ms 802.3bt Table 145-28	
<b>Power-Up / Down</b>				
linrush_init	Highest current drawn during the first 50 msec after power on (4 pair).	mA	< Class specific Max limits from Table 145-29.	PD8 PD51 PD52 PD53
linrush_tdel	Highest current drawn during the period from 50 msec to 80 msec after power-up (4 pair).	mA	802.3bt Table 145-29 & section 145.3.8.3.	
linrush_init_x	Highest current drawn during the first 50 msec after power on (2 pair).	mA		
linrush_tdel_x	Highest current drawn during the period from 50 msec to 80 msec after power-up (2 pair).	mA		
Tinrush	Time when inrush will be satisfied (4 pair).	ms	Computed from the total energy based on VPort and current drawn during a 50ms interval starting at the first current sample > linrush_PD(max) occurring during the first 50ms after power has been applied. If the DUT meets the defined inrush behavior, will be reported as 50ms and will pass. If the DUT exceeds 14.4W peak draw between 50ms – 80ms, will be reported as 80ms and will fail. PD's that never exceed Inrush_PD(max) will be reported as 50msec and will pass.	
Tinrush_x	Time when inrush will be satisfied (2 pair).	ms		
IlimMinViolation	PSE will set $I_{lim-2P}$ to 400mA for assigned class 1-3, which is the assigned class established by the test conditions. DUT is checked over a 1.5 second interval after $T_{inrush}$ has completed.	flag (1 or 0)	802.3bt Tables 145-29 & 145-16.	PD52 PD53
Vrefl_x	Voltage developed across a 100k load, connected for SINGLE or DUAL sig PD as shown in Figure 145-31.	VDC	< 2.8 VDC 802.3bt Table 145-29 & section 145.3.8.8.	PD7 PD66 PD67
Von	Voltage at which PD starts to draw load current	VDC	30 to 42, 802.3bt Table 145-29	PD39 PD41 PD43
Voff	Voltage at which PD stops drawing load current	VDC	> 30, 802.3bt Table 145-29. WARN if > 37VDC.	
Vhyst	Hysteresis band between Von and Voff.	VDC	Provided for information purposes. There is no explicit value for hysteresis specified in Table 145-29, but the need for hysteresis is implied by 802.3bt section 145.3.8.1 (startup oscillation).	
<b>2 Pair Powered Type-1 PHY</b>				
MinI_1	PD-under-test powered to PHY max Vport with 1-Event Classification	mA	0 to ( $P_{Class\_PD} / V_{PD}$ ) 802.3bt section 145.3.8.9, Table 145-31	PD1 PD3 PD4 PD5 PD6 PD9 PD20 PD21 PD38 PD44 PD54 PD72 PD73
Vport_1	Vport level at the point where the Ipeak_1 occurs.	V	$V_{Port\_PD}$ should conform to ranges in 802.3bt Table 145-29	
Ppeak_1	Maximum instantaneous power consumed by the PD while powered on at Type-1 $V_{Port\_PD}$	W	< $P_{Peak\_PD}$ (for PD Classification) 802.3bt Table 145-29, section 145.3.8.4	
Pport_1	Average power (1 second moving window) consumed by the PD while powered on at a Type-1 $V_{Port\_PD}$	W	< $P_{Class\_PD}$ (for PD Classification) 802.3bt Tables 145-29, -1, and -26, section 145.3.8.2, 145.3.6	
PeakViolation_1	Flag indicating that PD power draw exceeded $P_{Peak\_PD}$ . PD is at risk of overload shutdown by PSE.	flag (1 or 0)	802.3bt section 145.3.8.4	
MPSViolation_1	Flag indicating PD did not satisfy DC Maintain Power Signature (MPS) and will be potentially subject to shutdown by a PSE using DC MPS method.	flag (1 or 0)	In order to stay powered, the PD must draw > $I_{Port\_MPS}$ for a time period > $T_{MPS\_PD}$ msec out of every $T_{MPD\_PD}$ msec time interval. 802.3bt section 145.3.9, Table 145-32	
TcutWindowViolation_1	Flag indicating that PD power draw exceeded $P_{Class\_PD}$ for longer than $T_{cut\_min}$ (50 msec). PD is at risk of overload shutdown by PSE.	flag (1 or 0)	In order to stay powered, transient loads may not exceed $P_{Class\_PD}$ for time duration > $T_{CUT\_min}$ , or 50 msec. 802.3bt section 145.3.8.2 (also see 145.2.10.9).	
DutyCycleViolation_1	Flag indicating that PD power draw is exceeding $P_{Class\_PD}$ for greater than 5% of the time. PD is at risk of overload shutdown by PSE.	flag (1 or 0)	In order to stay powered, transient loads may not exceed $P_{Class\_PD}$ for > 5% duty cycle. 802.3bt section 145.3.8.4.	
<b>2 Pair Powered Type-3 PHY</b>				
<i>PD-under-test powered to PHY min Vport using 2-Event Classification</i>				



				see above	
MinI_PostAlloc					
Vport-2P_PostAlloc_x					
Ppeak_PostAlloc					
Ppeak_PostAlloc_x					
Pport_PostAlloc					
Pport_PostAlloc_x					
PeakViolation_PostAlloc	These parameters have to conform to the same conditions as defined above for the _PreAlloc parameters, with the difference being that the assigned class, and therefore $P_{class\_PD}$ and $P_{peak\_PD}$ (SINGLE) or $P_{class\_PD-2P}$ and $P_{peak\_PD-2P}$ (DUAL), have changed to correspond to the requested power from the PD, which has been allocated by the DLL process running in the PDA-604. Reference 802.3bt section 145.5.				
PeakViolation_PostAlloc_x					
MPSViolation_PostAlloc					
MPSViolation_PostAlloc_x					
TcutWindowViolation_PostAlloc					
TcutWindowViolation_PostAlloc_x					
DutyCycleViolation_PostAlloc					
DutyCycleViolation_PostAlloc_x					
<b>PD LLDP Protocol Parameters PD-under-test powered to Type-4 Vport with 1-Event Classification and subsequent LLDP Negotiation</b>					
TimeToLink		Length of time from power-up until LAN link was established. Reports '-1' if no link established.	seconds	Information parameter (INFO).	DLL1 DLL2 DLL3 DLL6
LinkSpeed	Speed of the LAN link. Reports '-1' if no link established.	10   100   1000	Information parameter (INFO).	DLL8 DLL10 DLL11 DLL13	
FirstReqTime	Length of time after power-up until first LLDP Power-via-MDI request (SINGLE sig) or PD requested power value Mode A (DUAL sig) received.	sec	Information parameter (INFO). 802.3bt requires that a Type-2 PD should link and initiate LLDP within 5 minutes of power-up. 802.3bt section 145.5.2		
FirstReqTime_B	Length of time after power-up until first LLDP Power-via-MDI PD requested power value Mode B received.	sec	Information parameter (INFO). 802.3bt requires that a Type-2 PD should link and initiate LLDP within 5 minutes of power-up. 802.3bt section 145.5.2		
PowerRequest	Contents of the PD requested power value field (SINGLE sig) or PD requested power value Mode A (DUAL sig) in the Power-via-MDI TLV.	W	0.1 to 99.9 W (SINGLE sig) 0.1 to 49.9 W (DUAL sig) 802.3 section 79.3.2.5, 79.3.2.6		
PowerRequest_B	Contents of the PD requested power value Mode B field in the Power-via-MDI TLV.	W	0.1 to 49.9 W (DUAL sig) 802.3 section 79.3.2.5, 79.3.2.6		
PDAckTime	Length of time it takes the PD to transmit of an updated LLDPPDU after an LLDPPDU with a new PSE allocated power value (SINGLE sig) or PSE allocated power value Alternative A (DUAL sig) has been sent by the PSE (PDA-604).	sec	< 10 sec 802.3bt section 145.5.2		
PDAckTime_B	Length of time it takes the PD to transmit of an updated LLDPPDU after an LLDPPDU with a new PSE allocated power value Alternative B (DUAL sig) has been sent by the PSE (PDA-604).	sec	< 10 sec 802.3bt section 145.5.2		
AllocPowerEchoed	Contents of the PSE allocated power value (SINGLE sig) or PSE allocated power value Alternative A (DUAL sig) from the LLDPPDU acknowledgement sent by the PD.	W	= Allocated power value sent by PDA-600 – this will be same as <b>PowerRequest</b> so long as <b>PowerRequest</b> is valid value. 802.3bt section 145.5.3.3, 145.5.3.4		
AllocPowerEchoed_B	Contents of the PSE allocated power value Alternative B (DUAL sig) from the LLDPPDU acknowledgement sent by the PD.	W	= Allocated power value sent by PDA-600 – this will be same as <b>PowerRequest</b> so long as <b>PowerRequest</b> is valid value. 802.3bt section 145.5.3.3, 145.5.3.4		
RespondsToAT_TLV	Flag indicating whether or not the PD responded to a 12 octet Power via MDI TLV. 802.3cv maintenance adds a recommendation that the PD respond AFTER it has first responded to a 29 octet Power via MDI TLV.		Information parameter (INFO). The response behavior is recommended, but is not a formal (normative) requirement.		