Power Over Ethernet Consortium

Clause 33 PD Parametric Test Suite Version 1.3

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Dave Dwelley
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Mr. Dwelley,

Enclosed are the results from the Clause 33 PD Parametric Test Suite performed on:

Linear Technology LTC 42571S8 485A Evaluation Board

This testing pertains to a set of standard requirements, put forth in the Clause 33 of IEEE Std. 802.3af, 2003 Edition. The tests performed are part of the Clause 33 PD Parametric Test Suite, which is available on the UNH InterOperability Lab's website:

ftp://ftp.iol.unh.edu/pub/poe/PoE_PD_Parametric_test_suite.pdf

There were no issues uncovered during the testing process.

As always, we welcome any comments regarding this test suite. If you have any questions or comments about test procedures or results, please feel free to contact me via e-mail at jtkent@iol.unh.edu or by phone at (603) 862-4196.

Regards,

Jeremy Kent

The following table contains possible results and their meanings.

Result	Interpretation
PASS	The DUT was observed to exhibit conformant behavior.
FAIL	The DUT was observed to exhibit non-compliant behavior.
PASS with Comments	The DUT was observed to exhibit conformant behavior, however this behavior deviated from previous compliant results. An additional explanation of the situation is included.
Warning	The DUT was observed to exhibit behavior that is not recommended.
Refer to Comments	From the observations, a valid pass or fail could not be determined. An additional explanation of the situation is included.
Not Applicable	The DUT does not support the technology required to perform these tests.
Not Available	Due to testing station or time limitations, the tests could not be performed, or were performed in a limited capacity.
Not Tested	Not tested due to time constraint of the test period.
Borderline	The observed values of the parameter is valid at one extreme, and invalid at the other extreme.
Informative	Results are for informative purposes only and are not judged on a pass or fail basis.

GROUP 1: PARAMETRIC TESTING

Test #	Test Label	Result	
33.1.1	PD Source Power	a	PASS

Comments on Test Procedure

Purpose: To verify that the DUT does not source power on its PI.

a. The DUT should not source power on its PI at any time.

Comments on Test Results

a. The DUT was observed to not source power on either of its two sets of PI conductors.

Test #	Test Label	Result	
33.1.2	PD Pinout	a	PASS
		b	Not Available

Comments on Test Procedure

Purpose: To verify that the DUT is insensitive to the polarity of the power supply and is able to operate in either Mode A or Mode B.

a. In all cases the DUT should accept the applied power and become operational once the requested power has been supplied.
b. The DUT should not accept power on Mode A and Mode B simultaneously.

Comments on Test Results

a. The DUT became operational when power was applied to Mode A (MDI and MDI-X), or Mode B (MDI and MDI-X).
b. Due to testing station limitations this test could not be performed.

Test #	Test Label	Result	
33.1.3	Valid PD Detection Signature Characteristics	a	PASS
		b	PASS
		c	Not Available
		d	Not Available

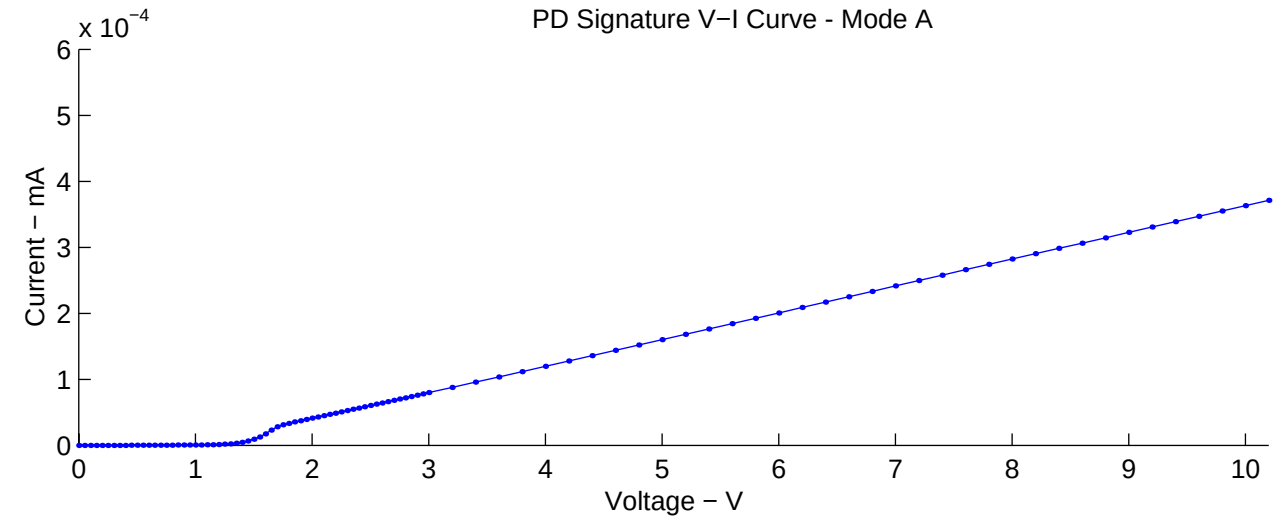
Comments on Test Procedure

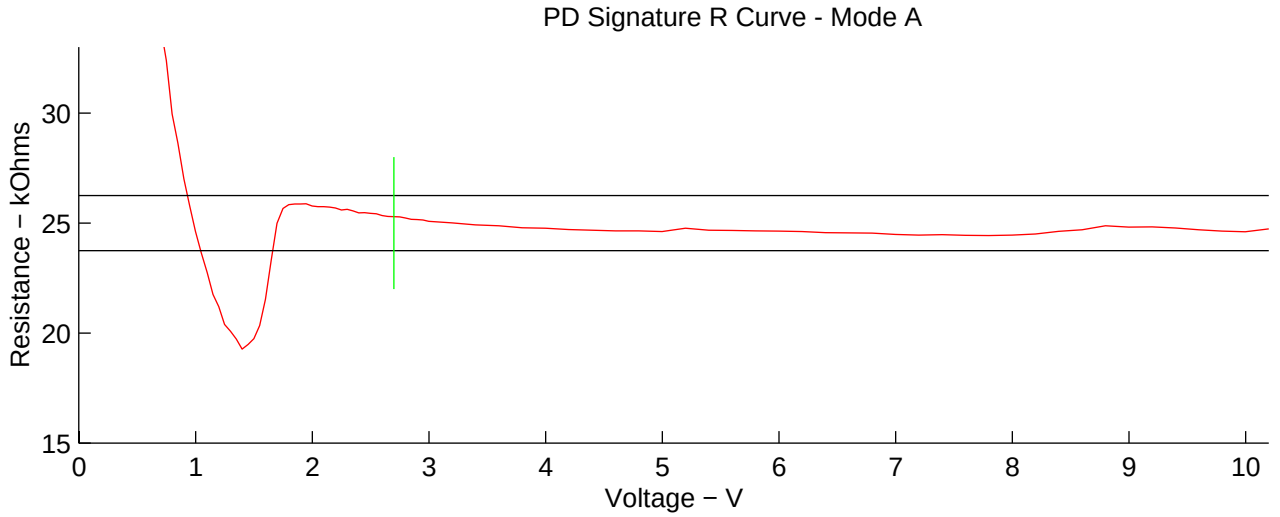
Purpose: To verify that the DUT presents a valid detection signature while it is requesting power on the PI.

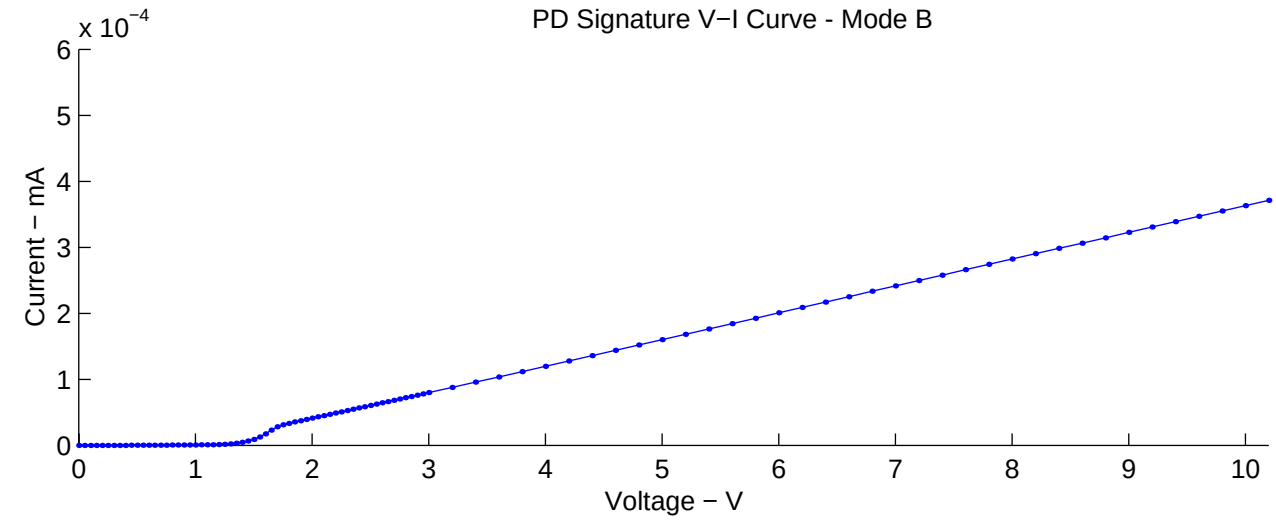
a. The observed signature resistance should between 23.75 and 26.25 kΩ (inclusive).
b. The DUT should have either a voltage offset less than of equal to 1.9 V, or a current offset less than or equal to 10 µA.
c. The DUT should have a signature capacitance between 0.05 and 0.12 µF (inclusive).
d. The observed signature inductance should be less than or equal to 100 µH.

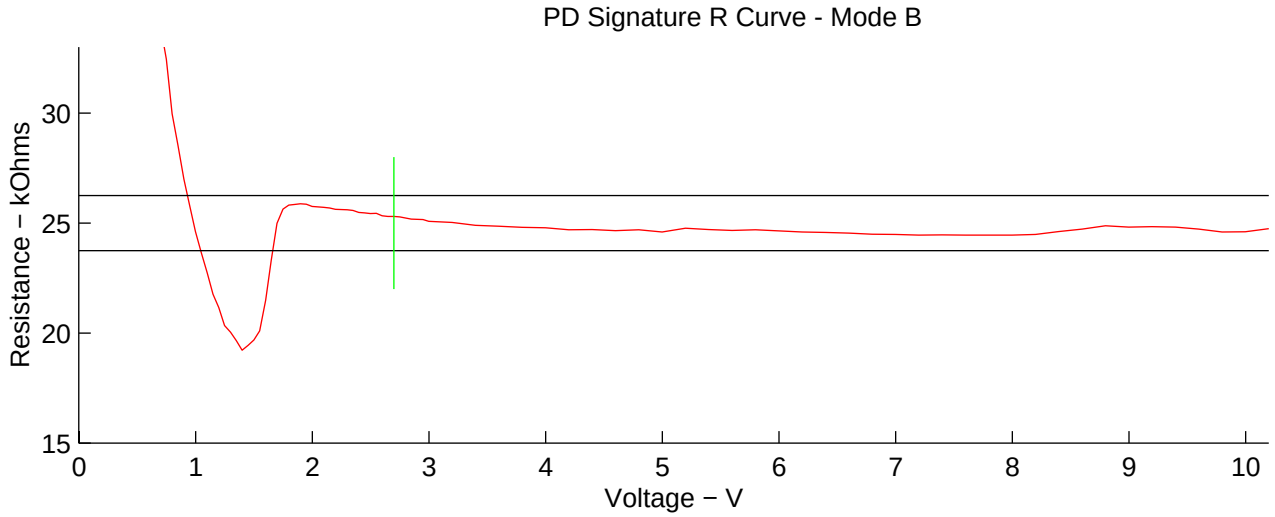
Comments on Test Results

a. Mode A – 24.44 kΩ ≤ R_{sig} ≤ 25.28 kΩ
   Mode B – 24.45 kΩ ≤ R_{sig} ≤ 25.28 kΩ
   Refer to the signature resistance plots on the following pages for further information regarding this test.
b. Mode A - V_{offset} ≤ 1.03 V
   Mode B - V_{offset} ≤ 1.03 V
c. Due to testing station limitations this test could not be performed.
d. Due to testing station limitations this test could not be performed.


PD Signature V−I Curve - Mode A
x 10^−4
Current − mA
Voltage − V
0
1
2
3
4
5
6
7
8
9
10


PD Signature R Curve - Mode A
Resistance − kOhms
Voltage − V
15
20
25
30
0
1
2
3
4
5
6
7
8
9
10


PD Signature V−I Curve - Mode B
x 10^−4
Current − mA
Voltage − V
0
1
2
3
4
5
6
7
8
9
10


PD Signature R Curve - Mode B
Resistance − kOhms
Voltage − V
15
20
25
30
0
1
2
3
4
5
6
7
8
9
10

Test #	Test Label	Result	
33.1.4	Non-Valid PD Detection Signature Characteristics	a	PASS
		b	Not Available

Comments on Test Procedure

Purpose: To verify that the DUT presents a non-valid detection signature while it is not requesting power, or once powered, at the PI of the non-powered pairs.

a. The PD should have a non-valid input resistance less than 12 kΩ or greater than 45 kΩ.
b. The PD should have an input capacitance of less than 10µF.

Comments on Test Results

a. The DUT properly displayed an invalid detection signature when it was not requesting power.
b. Due to testing station limitations this test could not be performed.

Test #	Test Label	Result	
33.1.5	PD Classification Characteristics	a	PASS
		b	PASS

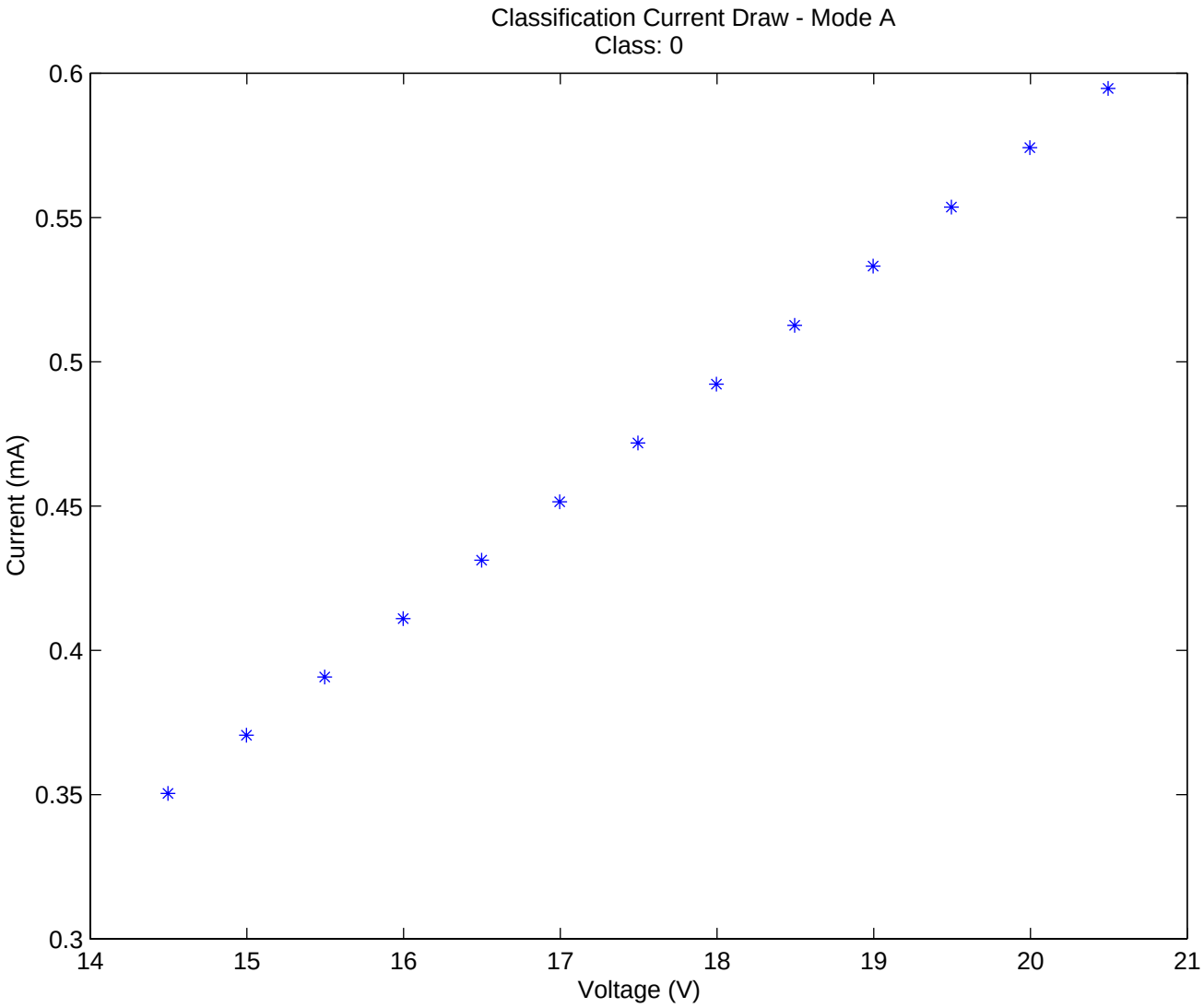
Comments on Test Procedure

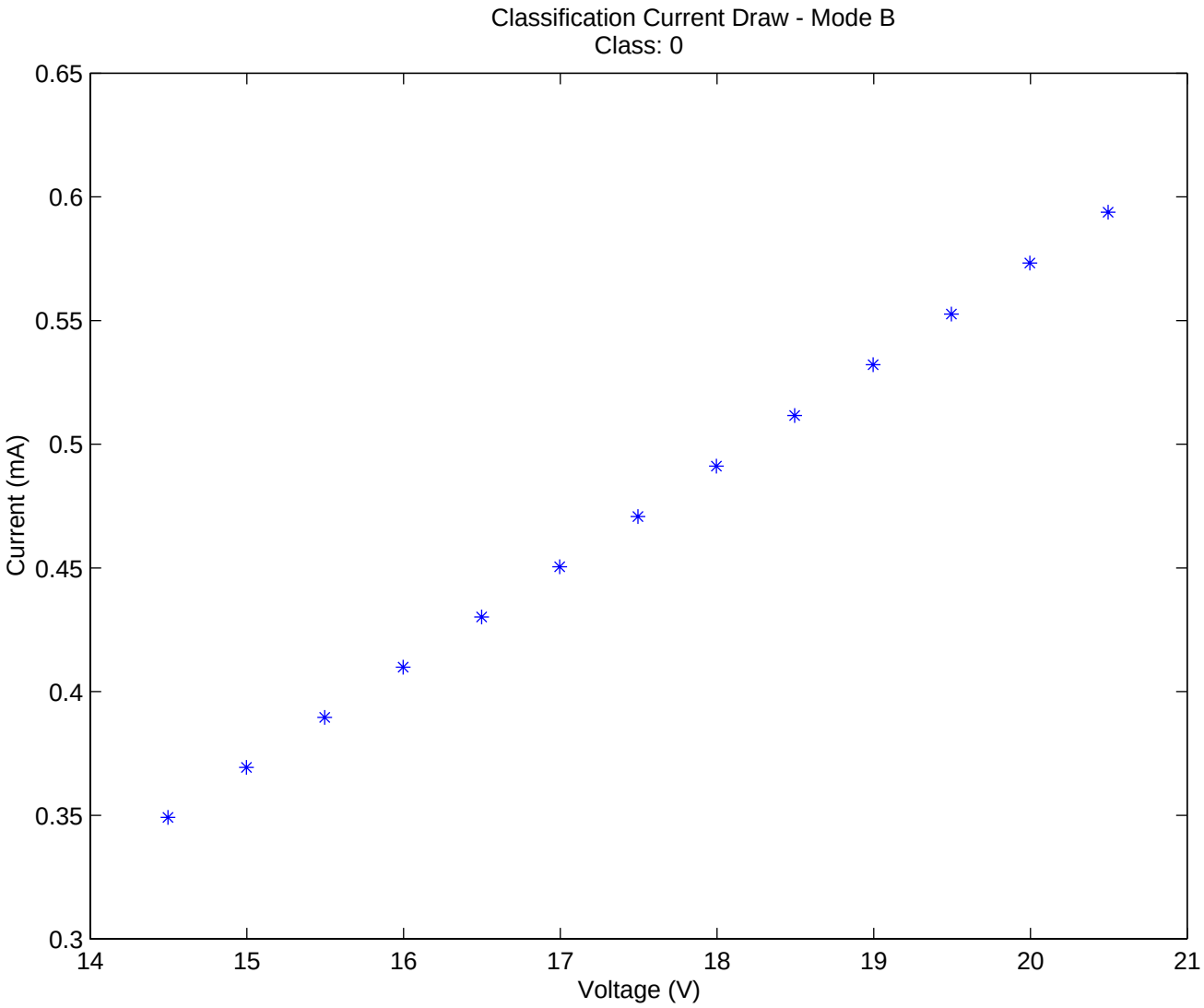
Purpose: To verify that the DUT provides proper information about its maximum power requirements, and that those requirements fall within the acceptable range.

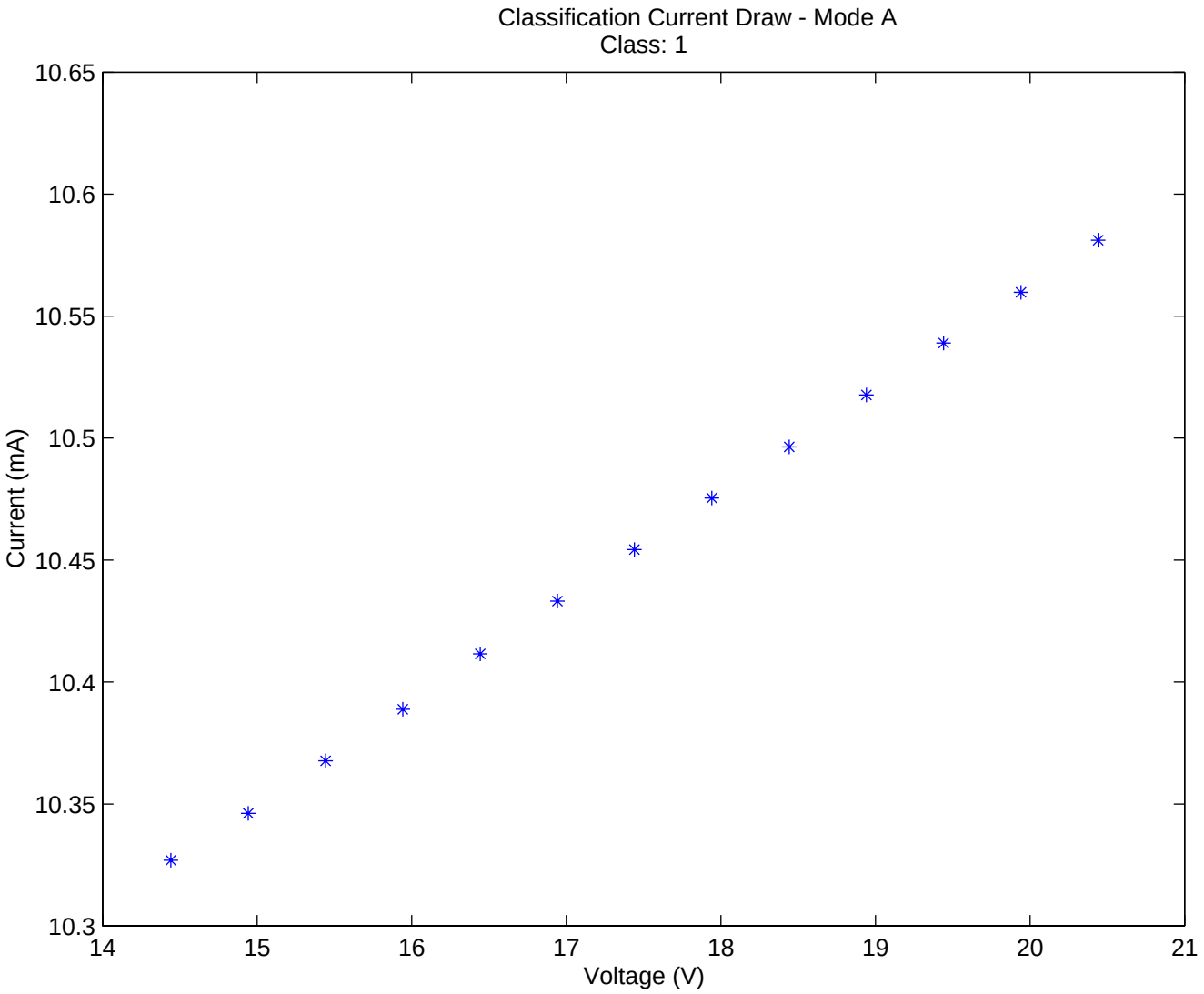
a. The current drawn by the DUT should fall within the range (inclusive) specified for each supported class.
b. The power drawn by the DUT should fall within the range (inclusive) specified for each supported class.

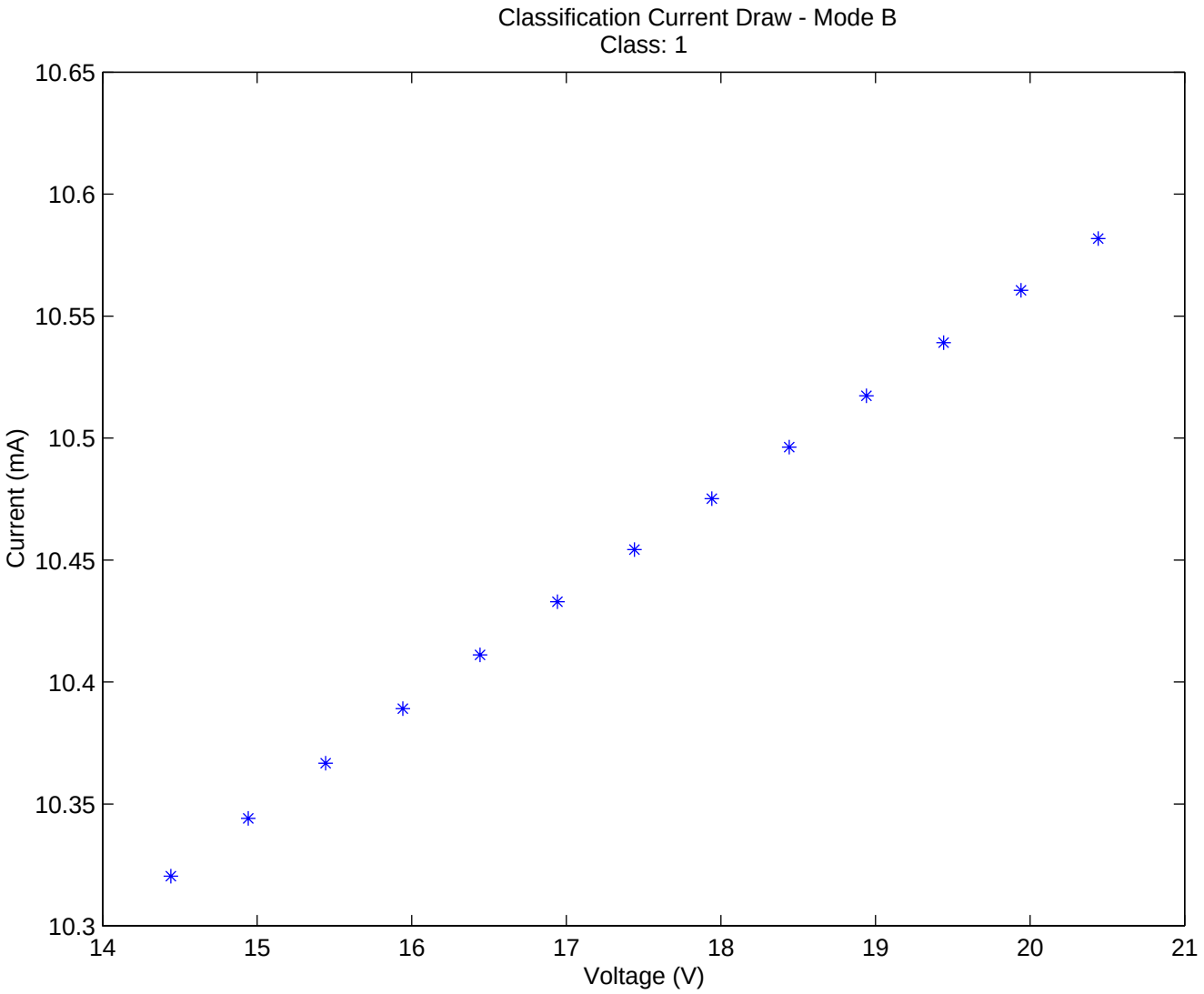
Comments on Test Results

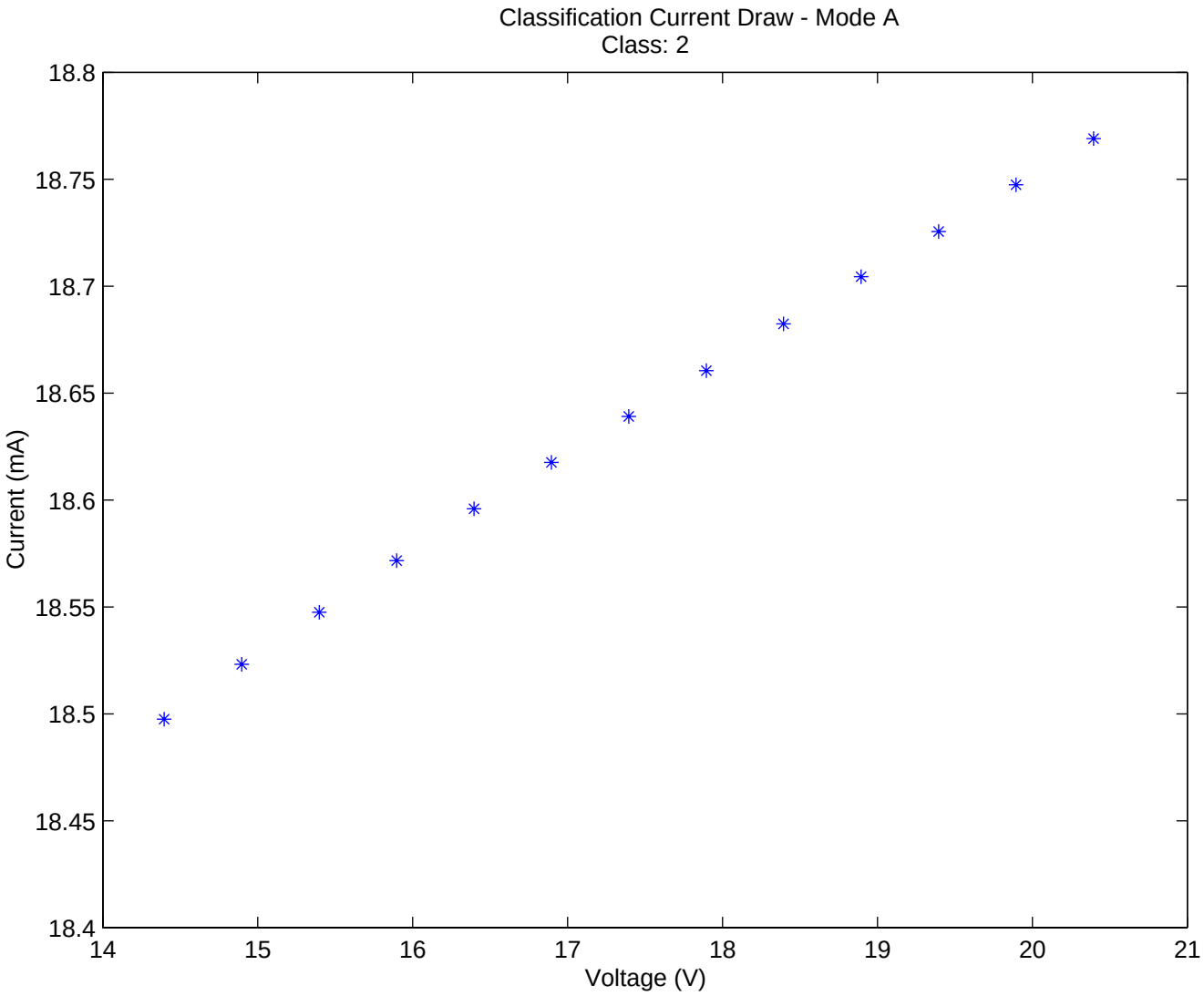
a. The DUT was observed to present the appropriate classification signature for both Mode A and Mode B. Refer to the classification plots on the following pages for further information regarding this test.
b. Mode A – 0.83 W ≤ P_{port} ≤ 0.91 W
   Mode B – 0.83 W ≤ P_{port} ≤ 0.91 W

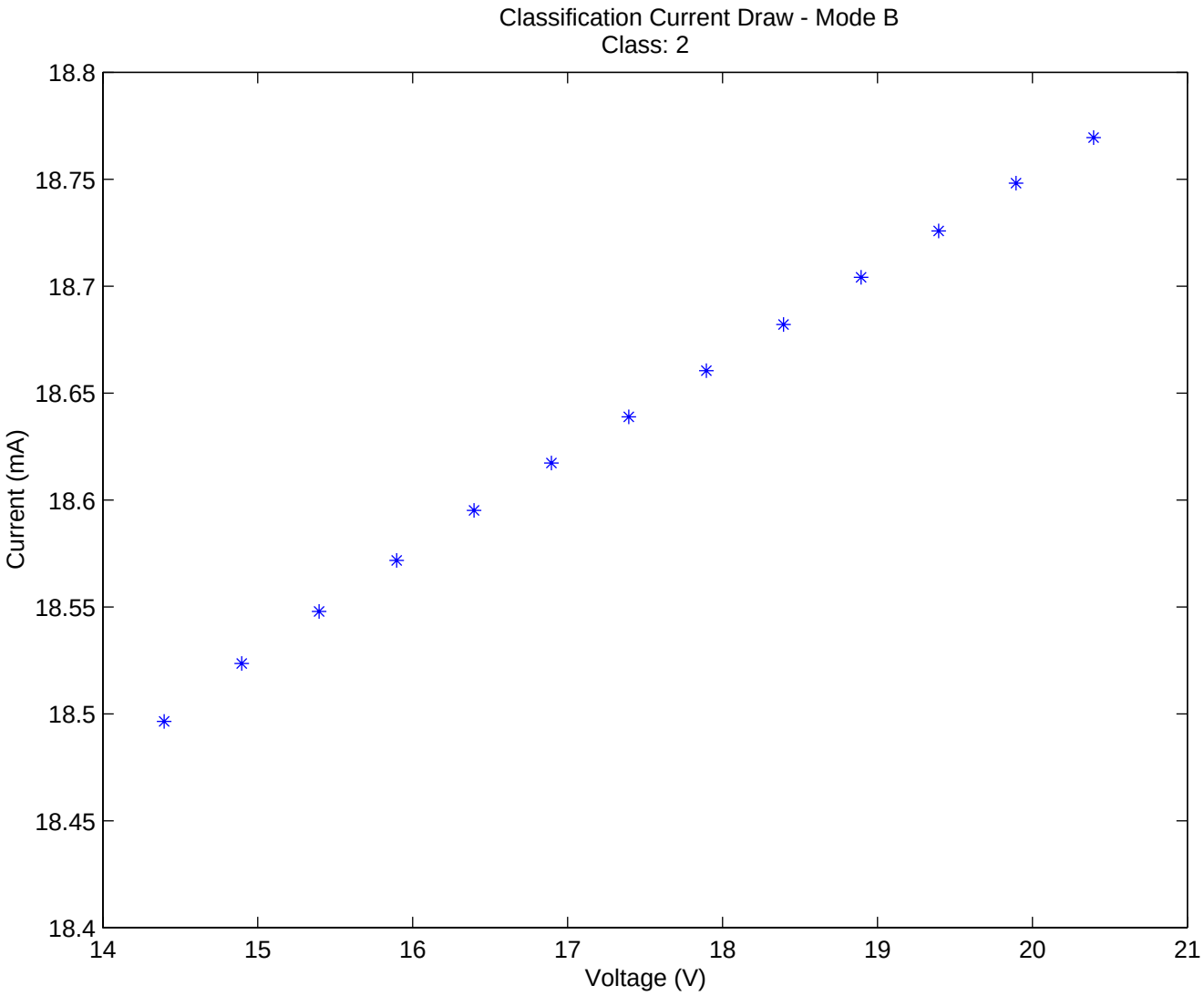

Classification Current Draw - Mode A
Class: 0
Current (mA)
Voltage (V)
0.6
0.55
0.5
0.45
0.4
0.35
0.3
14
15
16
17
18
19
20
21

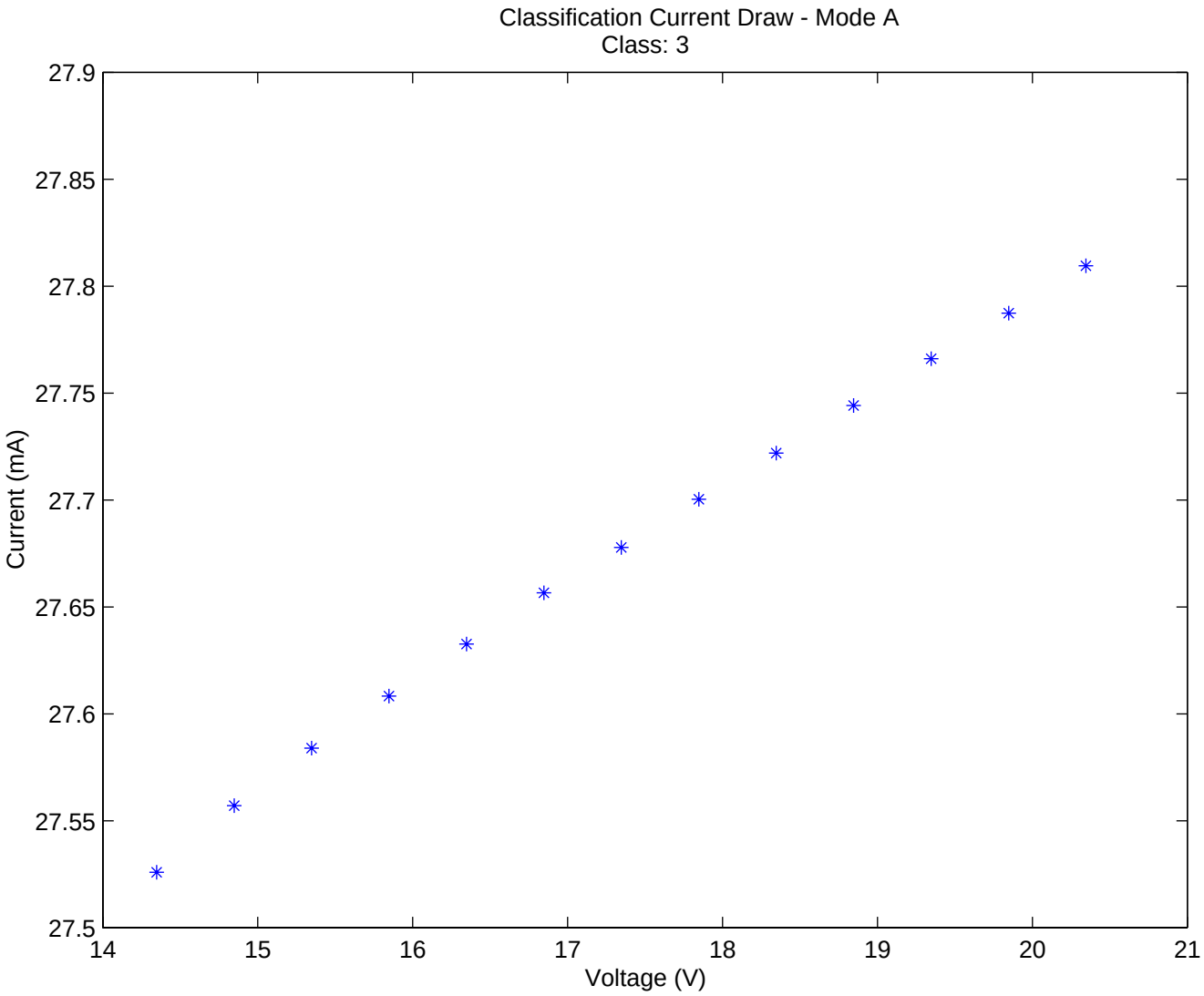

Classification Current Draw - Mode B
Class: 0
Current (mA)
Voltage (V)
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
14
15
16
17
18
19
20
21

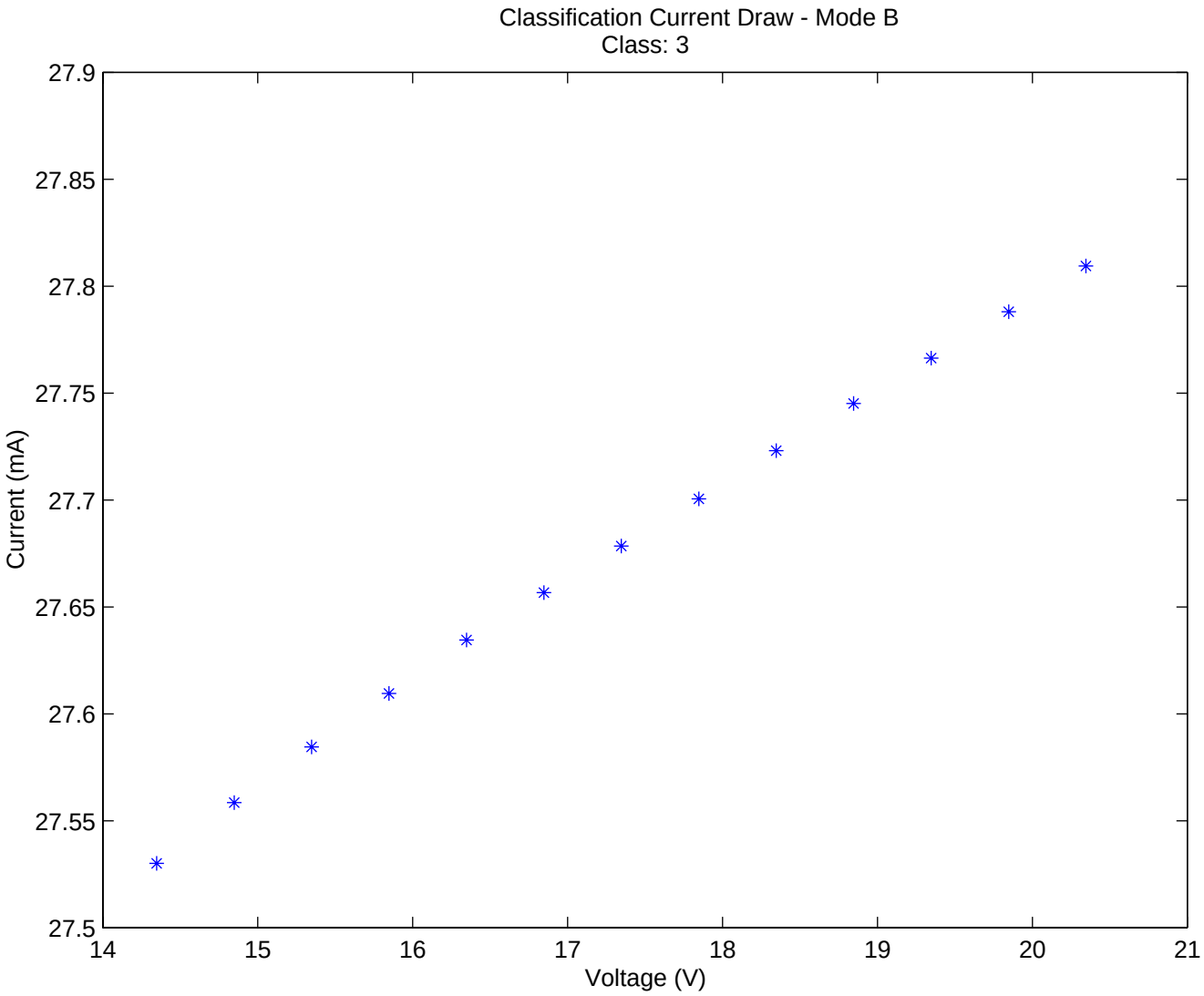

Classification Current Draw - Mode A
Class: 1
Current (mA)
Voltage (V)
10.65
10.6
10.55
10.5
10.45
10.4
10.35
10.3
14
15
16
17
18
19
20
21

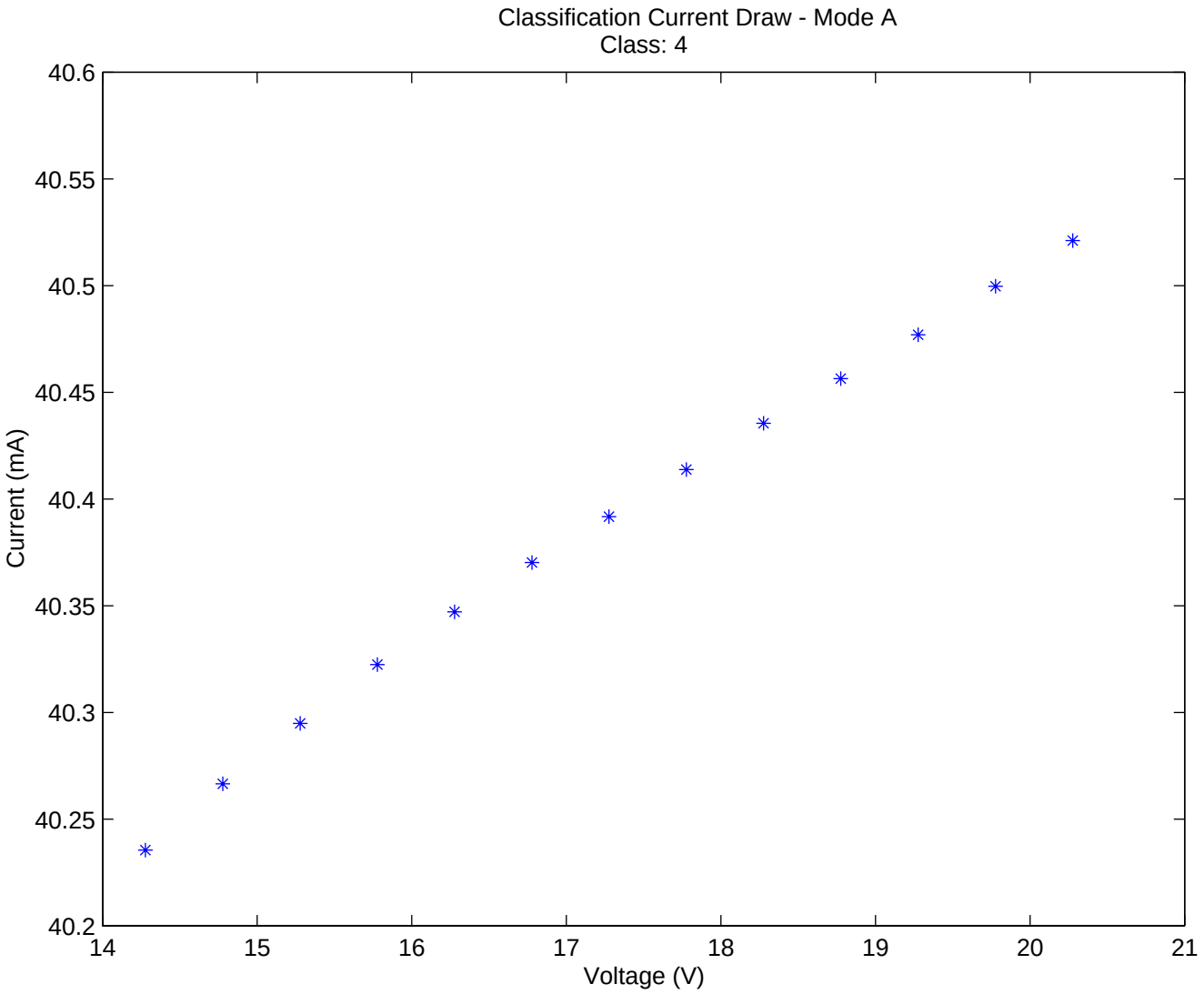

Classification Current Draw - Mode B
Class: 1
Current (mA)
Voltage (V)
10.65
10.6
10.55
10.5
10.45
10.4
10.35
10.3
14
15
16
17
18
19
20
21

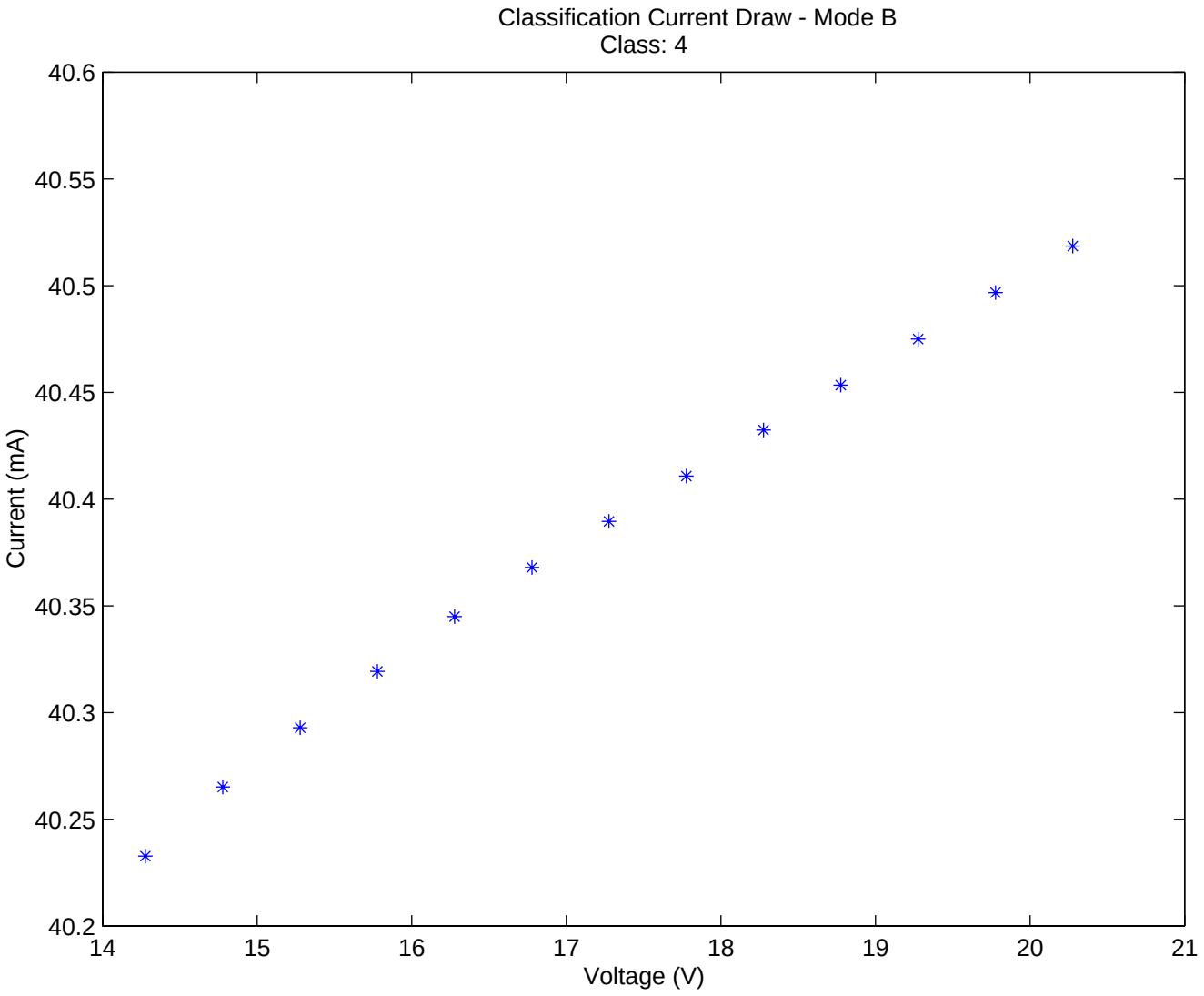

Classification Current Draw - Mode A
Class: 2
Current (mA)
Voltage (V)
18.8
18.75
18.7
18.65
18.6
18.55
18.5
18.45
18.4
14
15
16
17
18
19
20
21


Classification Current Draw - Mode B
Class: 2
Current (mA)
Voltage (V)
18.8
18.75
18.7
18.65
18.6
18.55
18.5
18.45
18.4
14
15
16
17
18
19
20
21


Classification Current Draw - Mode A
Class: 3
Current (mA)
Voltage (V)
27.9
27.85
27.8
27.75
27.7
27.65
27.6
27.55
27.5
14
15
16
17
18
19
20
21


Classification Current Draw - Mode B
Class: 3
Current (mA)
Voltage (V)
27.9
27.85
27.8
27.75
27.7
27.65
27.6
27.55
27.5
14
15
16
17
18
19
20
21


Classification Current Draw - Mode A
Class: 4
Current (mA)
Voltage (V)
40.6
40.55
40.5
40.45
40.4
40.35
40.3
40.25
40.2
14
15
16
17
18
19
20
21


Classification Current Draw - Mode B
Class: 4
Current (mA)
Voltage (V)
40.6
40.55
40.5
40.45
40.4
40.35
40.3
40.25
40.2
14
15
16
17
18
19
20
21

Test #	Test Label	Result	
33.1.6	PD Power Supply Turn On / Off	**a**	**Not Applicable**
		b	**Not Applicable**
		c	**Not Applicable**

Comments on Test Procedure

Purpose: To verify that the DUT will turn on once power has been applied to the PI, will remain on over the entire port voltage range, and turn off once power is removed.

a. The DUT should become fully operational at a port voltage less than 42 V.
b. Once the DUT has turned on, it should remain operational for port voltages between 44 V and 57 V.
c. The DUT should turn off at a port voltage greater than 30V and less than 36 V.

Comments on Test Results

The DUT was an evaluation board, and there were no means to determine when the DUT became operational; therefore this test did not apply.