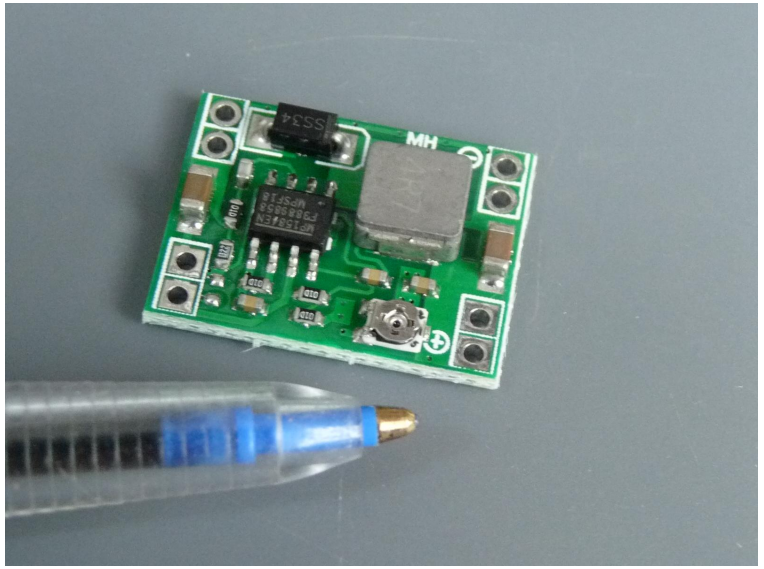
MP1584EN Buck (Step-Down) DC-DC Converter

These tests were conducted by Gogo:Tronics using common hobby grade and DIY equipment, voltages and currents were generally set/recorded to within 100mv and 10mA.



Tested Input Range	5 to 28v (see below table for further limits)
Tested Output Range	1.5 to 19v (down to 0.8v possible but ripple increases)
Tested Current	2A Max
Typical No Load Current	350uA

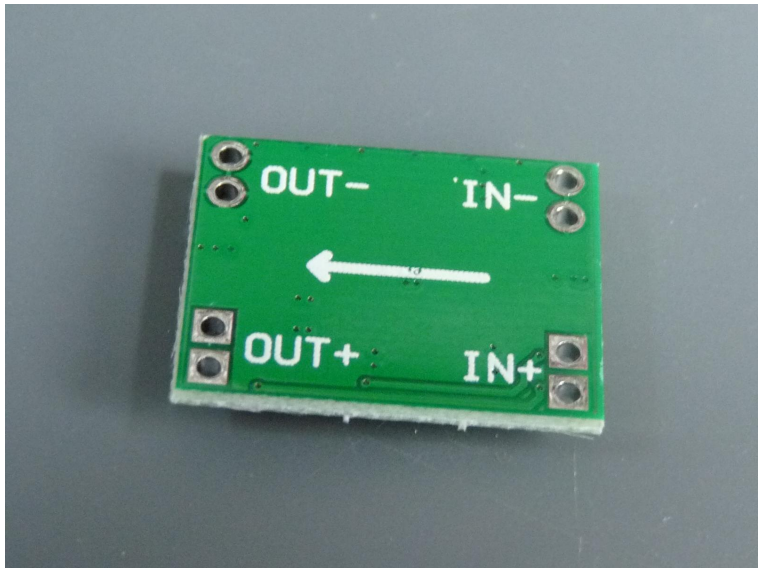
Comments

Additional electrolytic output capacitor should be soldered directly to the module output, 100uF is a good value for all output voltages, output voltages 5v+ even 1uF is sufficient. All tests here are with a capacitor, without the stability and capability is greatly reduced.

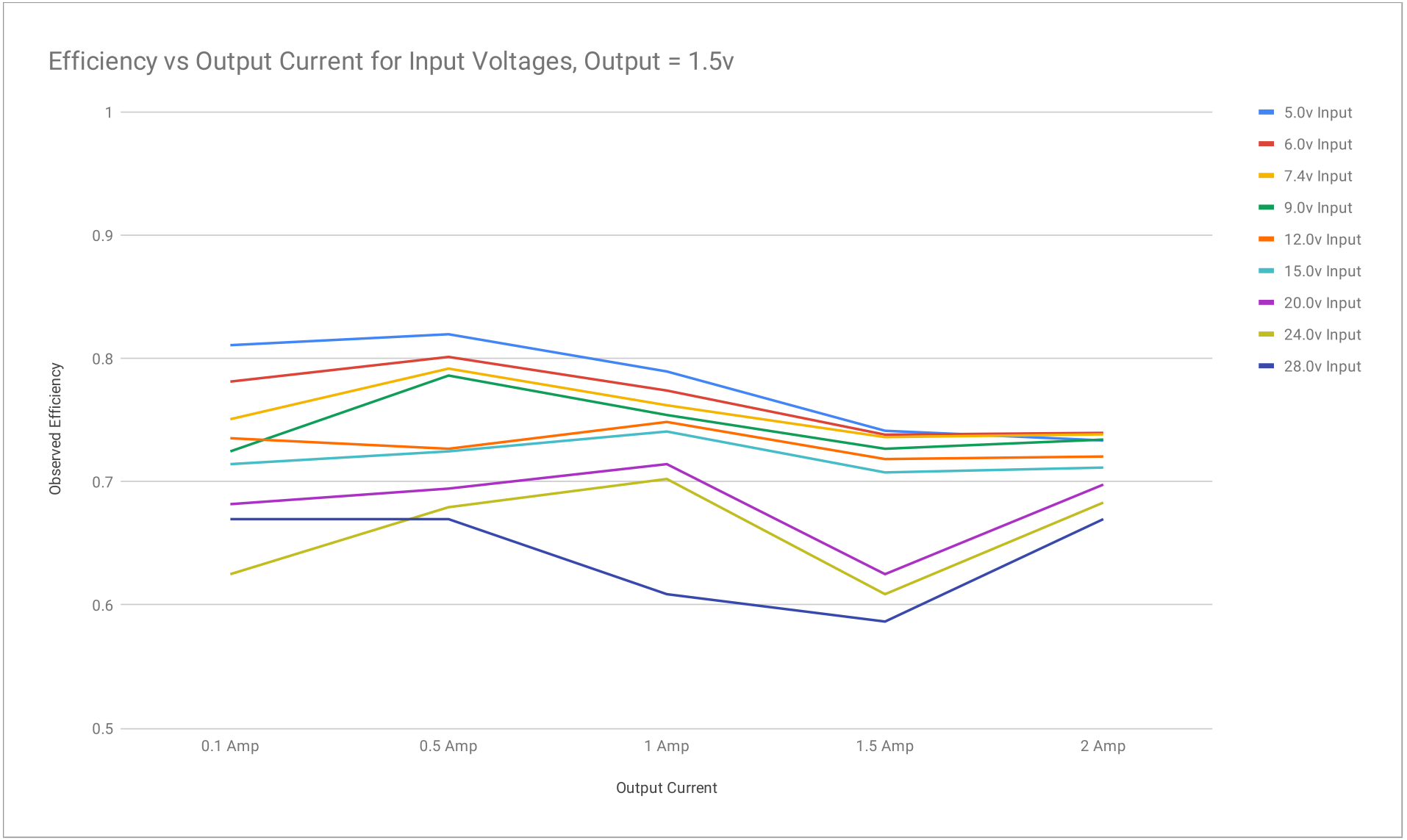
Tested results below are generally the stable limits found, operation below minimum input/above maximum current for the given output voltages may have considerable ripple, instability, or thermal cut-out.

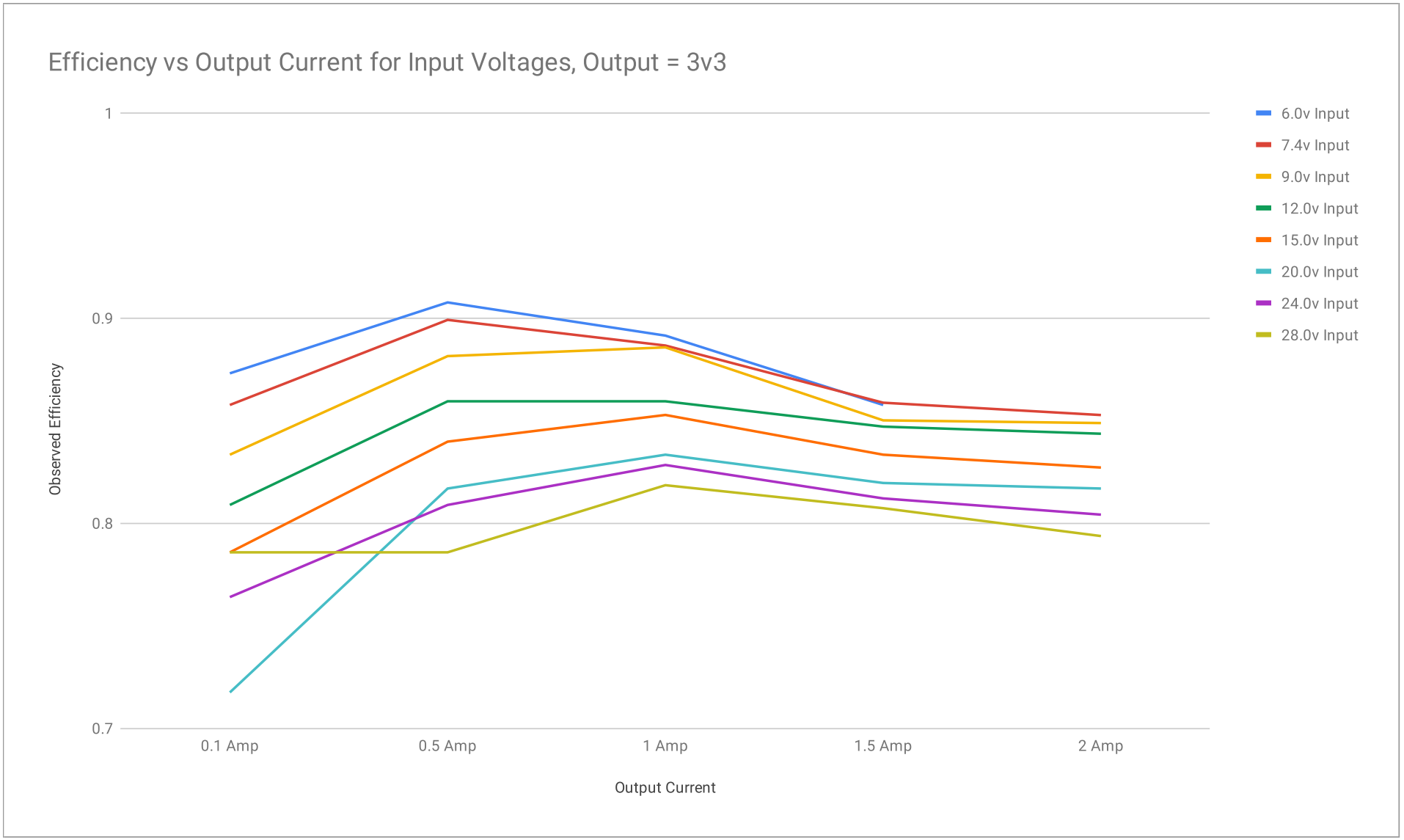
As indicated in the table, increasing the input voltage can allow higher output current without increased ripple in some cases (see example 3.3v output with input 6 to 7.4v maximum current 1.5A, but increase input to 7.4v+ and you can do 2A without issue)

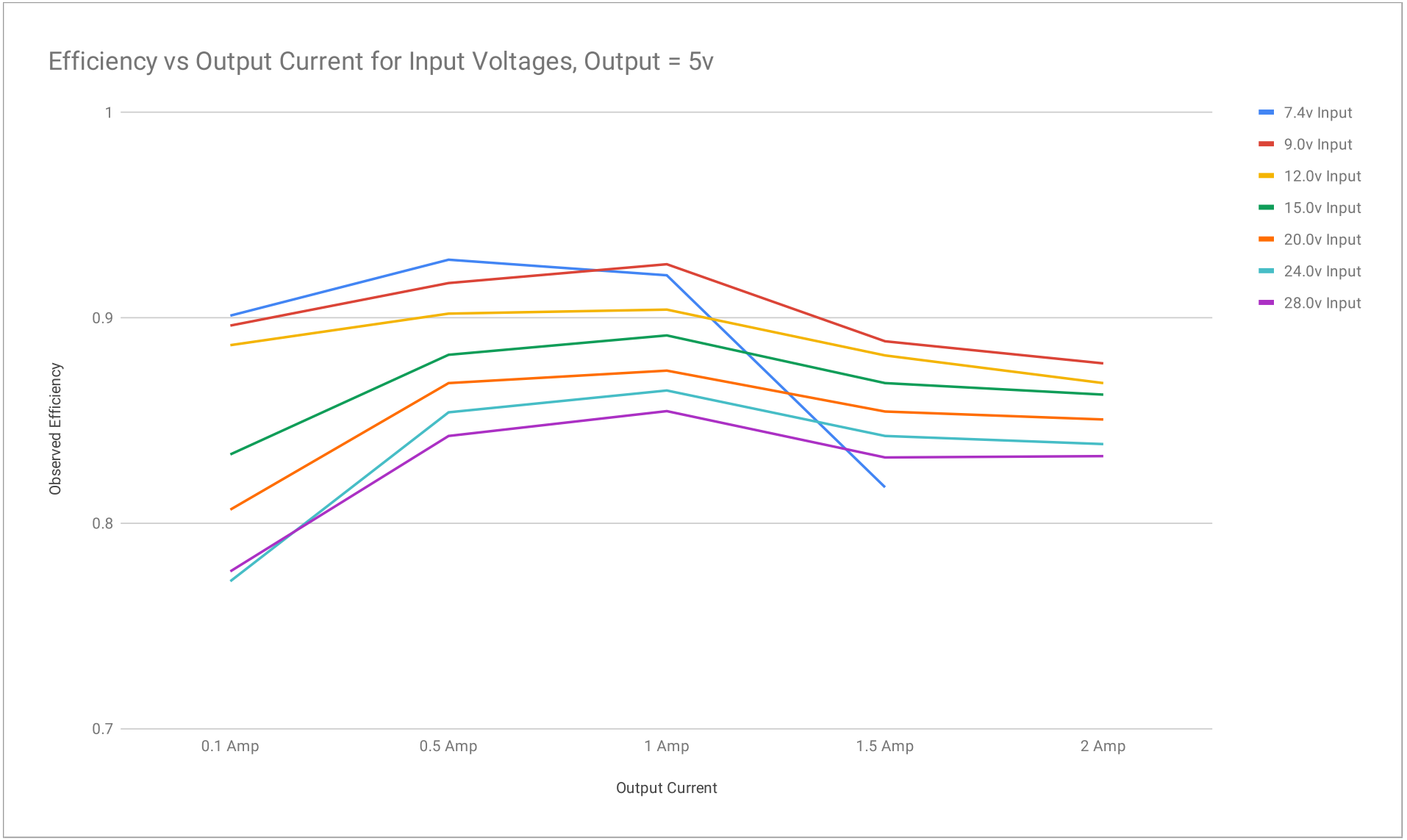
Max Output Current is continuous, short duration peak may be possible (3A peak capability for a few seconds was observed with 5v output, but other peaks not tested).

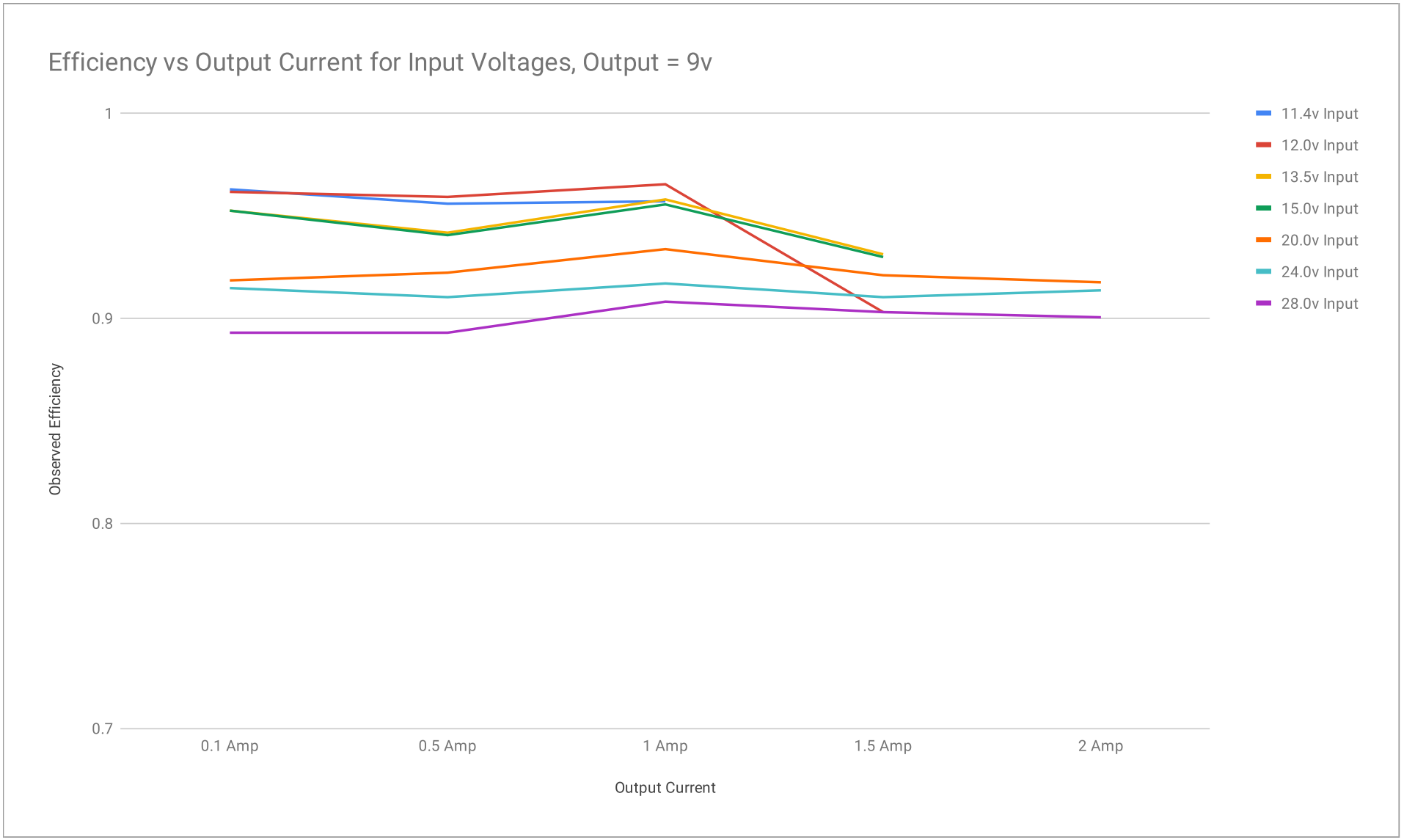


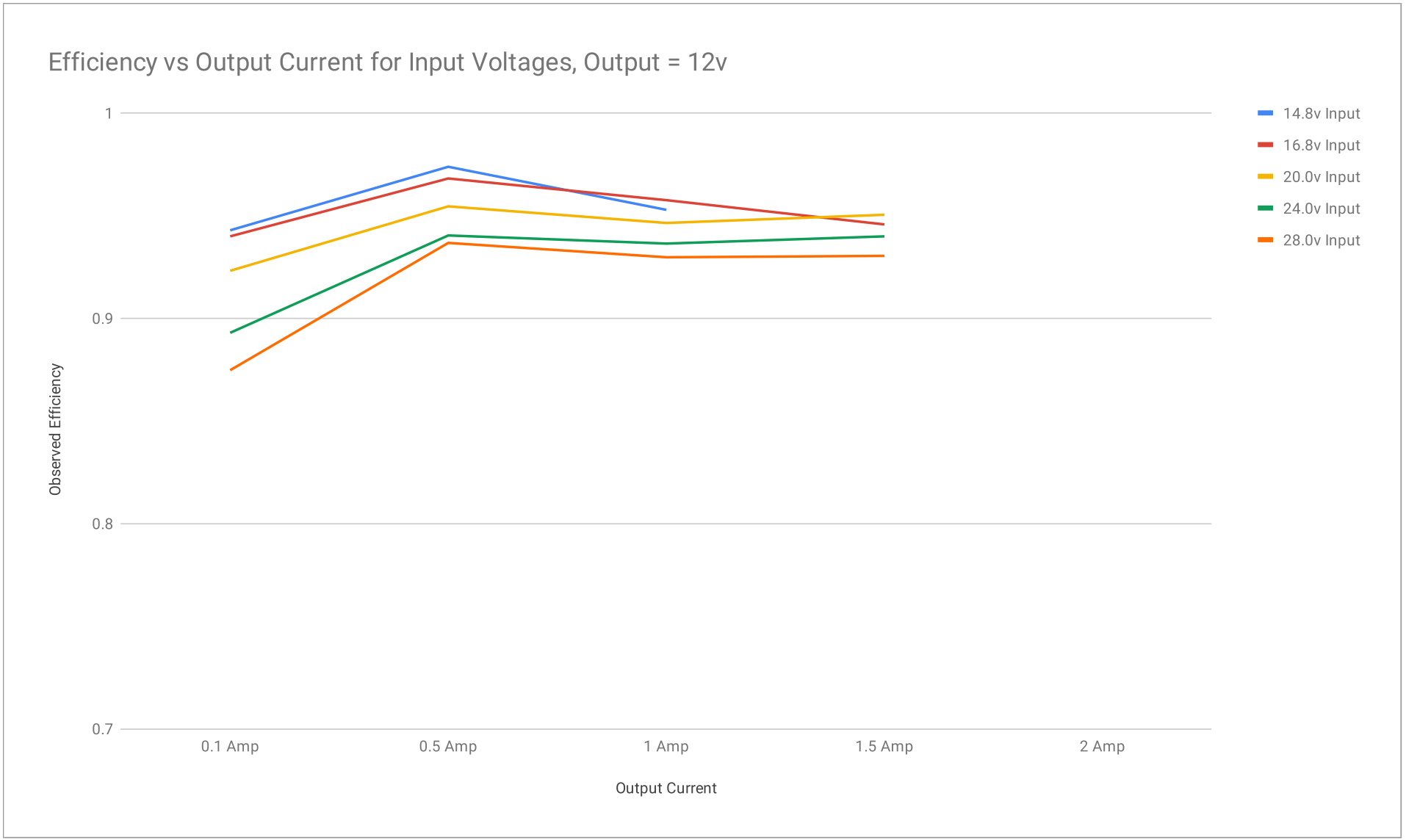
Output Voltage	Max Output Current	Min Input Voltage	Best Tested Efficiency
1.5v	2A	5v	82% 0.5A @ 5v Input
3.3v	1.5A	6v	91% 0.5A @ 6v Input
3.3v	2A	7.4v	90% 0.5A @ 7.4v Input
5v	2A	7.4v	93% 0.5A @ 7.4v Input
9v	1.5A	11.4v	96% 0.1A @ 11.4v Input
9v	1.5A	12v	97% 1A @ 12v Input
12v	1A	14.8v	94% 0.5A @ 14.8v Input
12v	1.5A	16.8v	94% 0.5A @ 16.8v Input
15v	0.5A	18.5v	95% 0.5A @ 18.5v Input
15v	1A	20v	92% 1A @ 24v Input
19v	0.5A	24v	96% 0.5A @ 24v Input
19v	1A	25.5v	96% 1A @ 28v Input

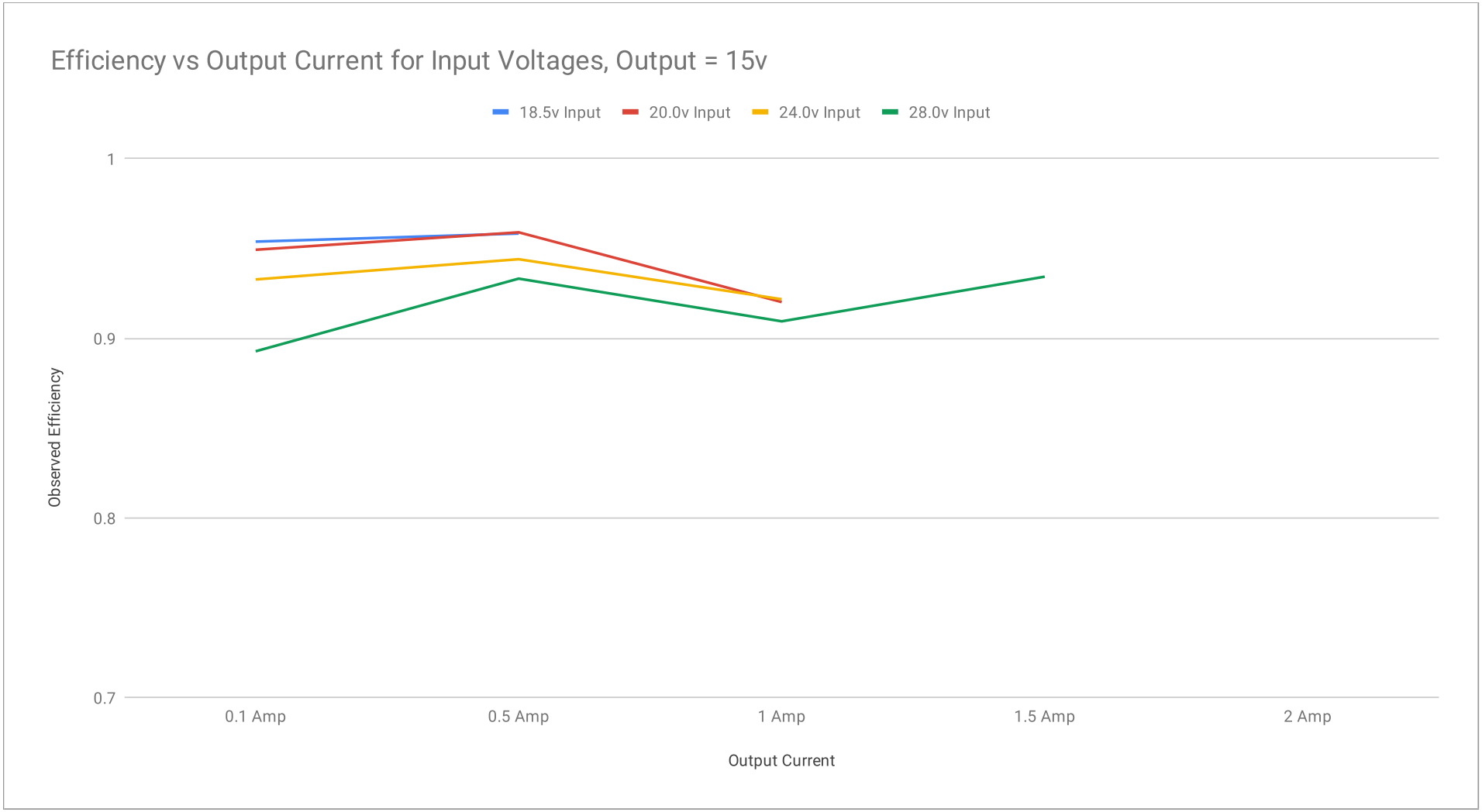

Efficiency vs Output Current for Input Voltages, Output = 1.5v
Observed Efficiency
1
0.9
0.8
0.7
0.6
0.5
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current
5.0v Input
6.0v Input
7.4v Input
9.0v Input
12.0v Input
15.0v Input
20.0v Input
24.0v Input
28.0v Input

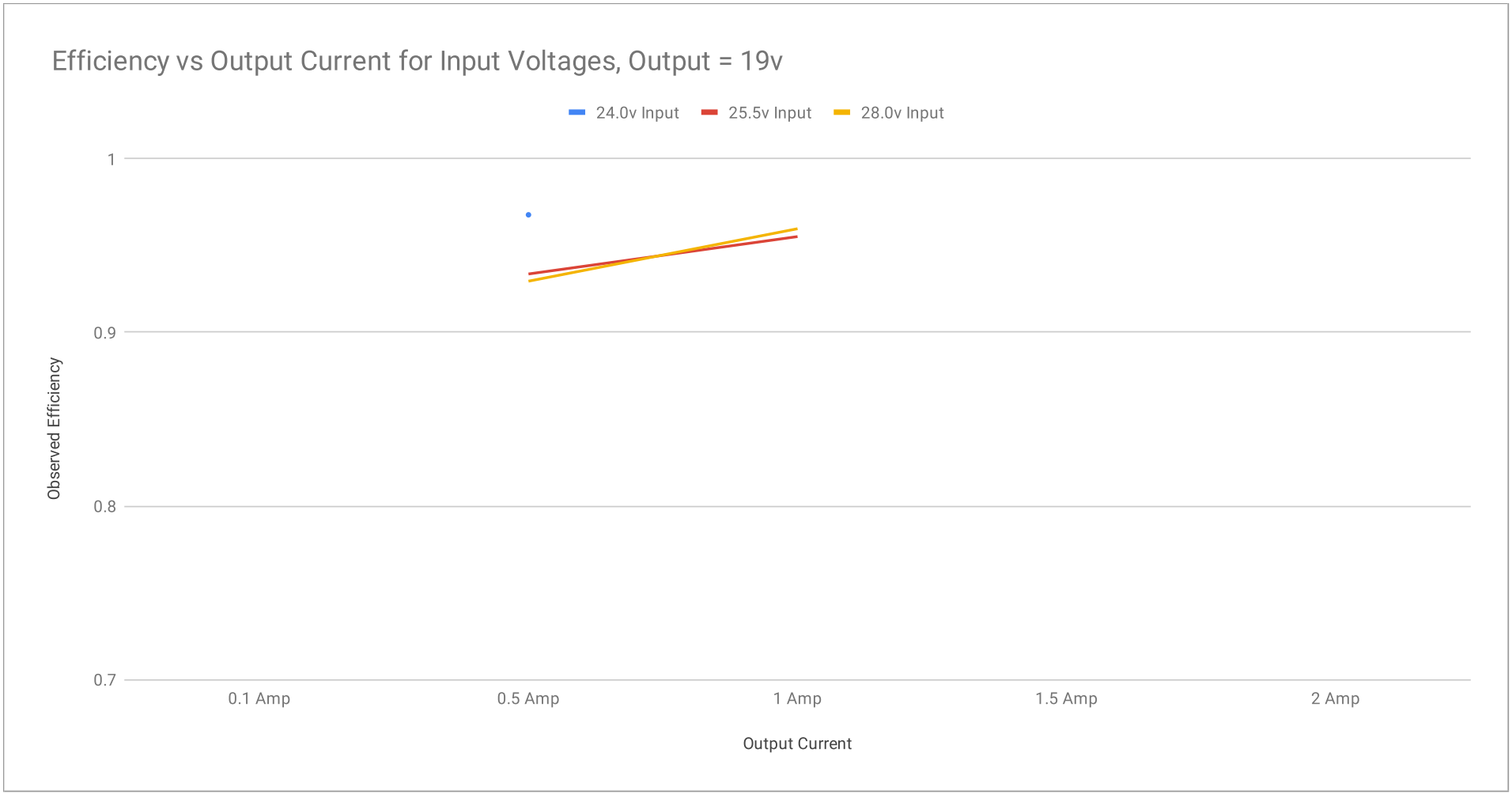

Efficiency vs Output Current for Input Voltages, Output = 3v3
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current
6.0v Input
7.4v Input
9.0v Input
12.0v Input
15.0v Input
20.0v Input
24.0v Input
28.0v Input


Efficiency vs Output Current for Input Voltages, Output = 5v
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current
7.4v Input
9.0v Input
12.0v Input
15.0v Input
20.0v Input
24.0v Input
28.0v Input


Efficiency vs Output Current for Input Voltages, Output = 9v
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current
11.4v Input
12.0v Input
13.5v Input
15.0v Input
20.0v Input
24.0v Input
28.0v Input


Efficiency vs Output Current for Input Voltages, Output = 12v
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current
14.8v Input
16.8v Input
20.0v Input
24.0v Input
28.0v Input


Efficiency vs Output Current for Input Voltages, Output = 15v
18.5v Input
20.0v Input
24.0v Input
28.0v Input
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current


Efficiency vs Output Current for Input Voltages, Output = 19v
24.0v Input
25.5v Input
28.0v Input
1
0.9
0.8
0.7
Observed Efficiency
0.1 Amp
0.5 Amp
1 Amp
1.5 Amp
2 Amp
Output Current