

## **PMP40144 Test Results**

### **1 General**

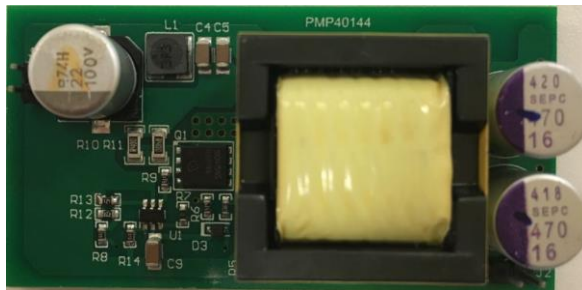
#### **1.1 PURPOSE**

The PMP40144 is a 12V2A reference design solution for PoE applications. The solution implements a high efficiency primary side controller UCC28704, eliminating feedback components (TL431, opto-coupler). The efficiency is >89% at full load. Integrated input UVLO, OVP and output OVP, OCP improves the power system reliability. The design is achieved in a compact form factor (68mm X 36mm X 15mm).

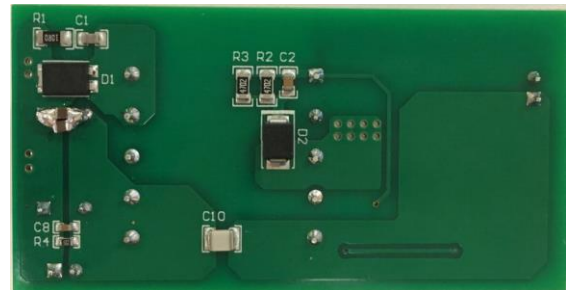
#### **TEST EQUIPMENTS**

Multi-meter: Fluke Multimeter 287C, Agilent 34401A, Fluke 8845A  
DC Source: TDK-Lambda, DC Load: Chroma 63103A  
Ambient Temperature at 25DegC

#### **1.2 TEST Setup Photos**



**Top View of the Board**



**Bottom View of the Board**

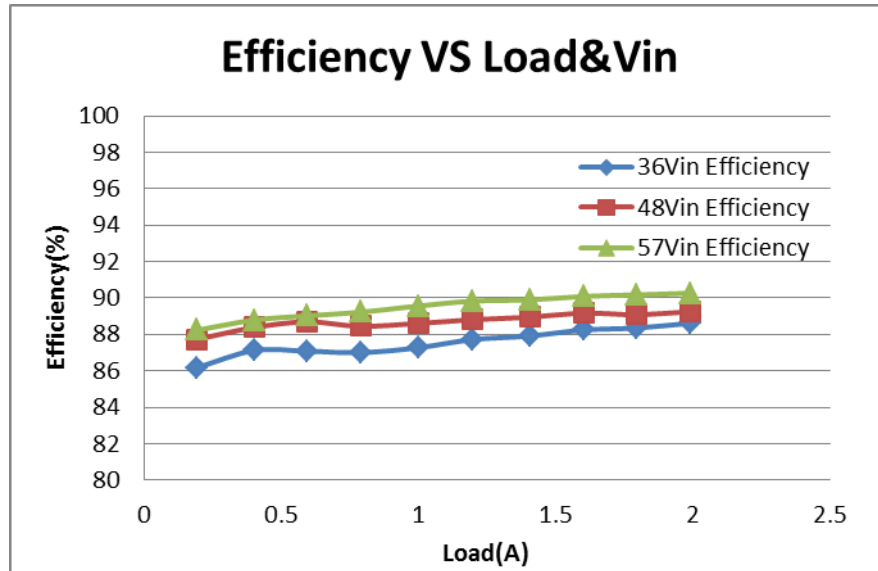
## **2 INPUT & Output CHARACTERISTICS**

### **2.1: Efficiency Data VS Output**

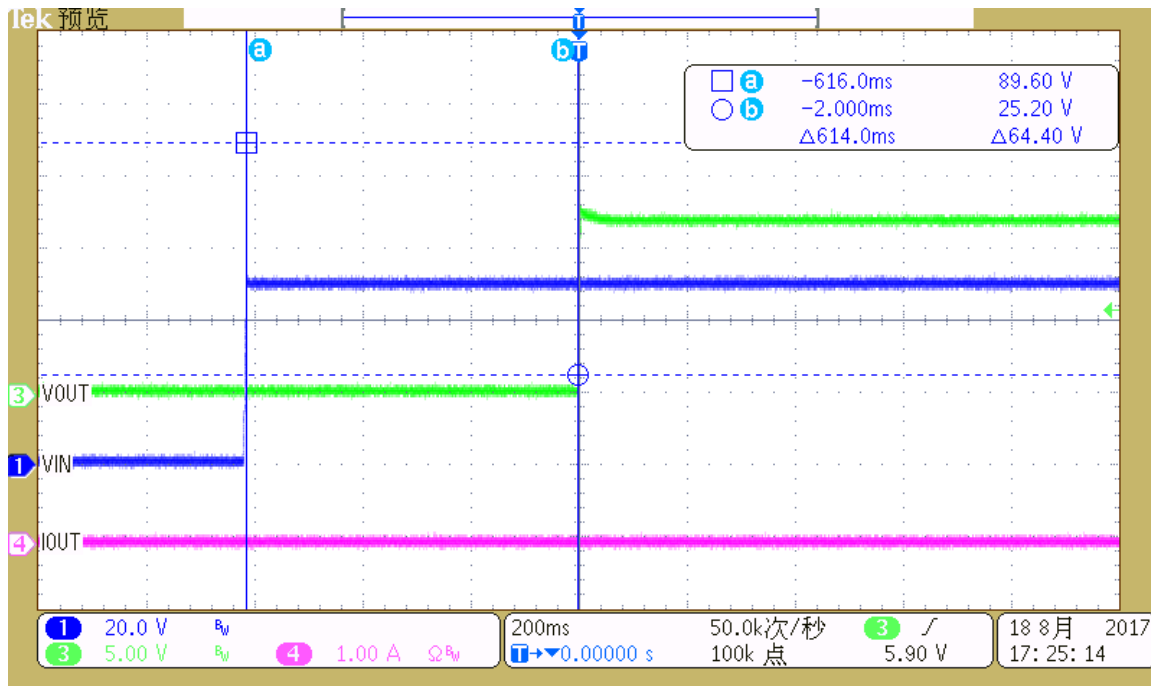
Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Efficiency
36.03	0.0004	0.01	11.89	0		
36.02	0.0737	2.65	11.91	0.1921	2.29	86.17
36.01	0.1534	5.52	11.99	0.4013	4.81	87.12
36.00	0.2293	8.25	12.05	0.5963	7.19	87.08
35.99	0.3065	11.03	12.13	0.7913	9.60	87.00
35.98	0.3892	14.00	12.19	1.0022	12.22	87.28
35.97	0.4646	16.71	12.24	1.1972	14.66	87.72
35.96	0.5477	19.69	12.31	1.4063	17.31	87.92
35.94	0.6254	22.48	12.37	1.6041	19.84	88.24
35.93	0.7030	25.26	12.43	1.7953	22.32	88.35
35.92	0.7814	28.07	12.49	1.9913	24.88	88.62

Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Efficiency
48.03	0.0001	0.00	11.88	0		
48.02	0.0542	2.60	11.89	0.1921	2.28	87.73
48.01	0.1129	5.42	11.97	0.4003	4.79	88.38
48.00	0.1686	8.09	12.04	0.5963	7.18	88.70
48.00	0.2253	10.81	12.10	0.7903	9.56	88.45
47.99	0.2869	13.77	12.17	1.0022	12.20	88.61
47.98	0.3438	16.50	12.24	1.1972	14.65	88.81
47.97	0.4011	19.24	12.29	1.3922	17.12	88.95
47.97	0.4638	22.25	12.37	1.6041	19.84	89.17
47.96	0.5221	25.04	12.43	1.7953	22.31	89.09
47.95	0.5813	27.87	12.49	1.9913	24.88	89.25

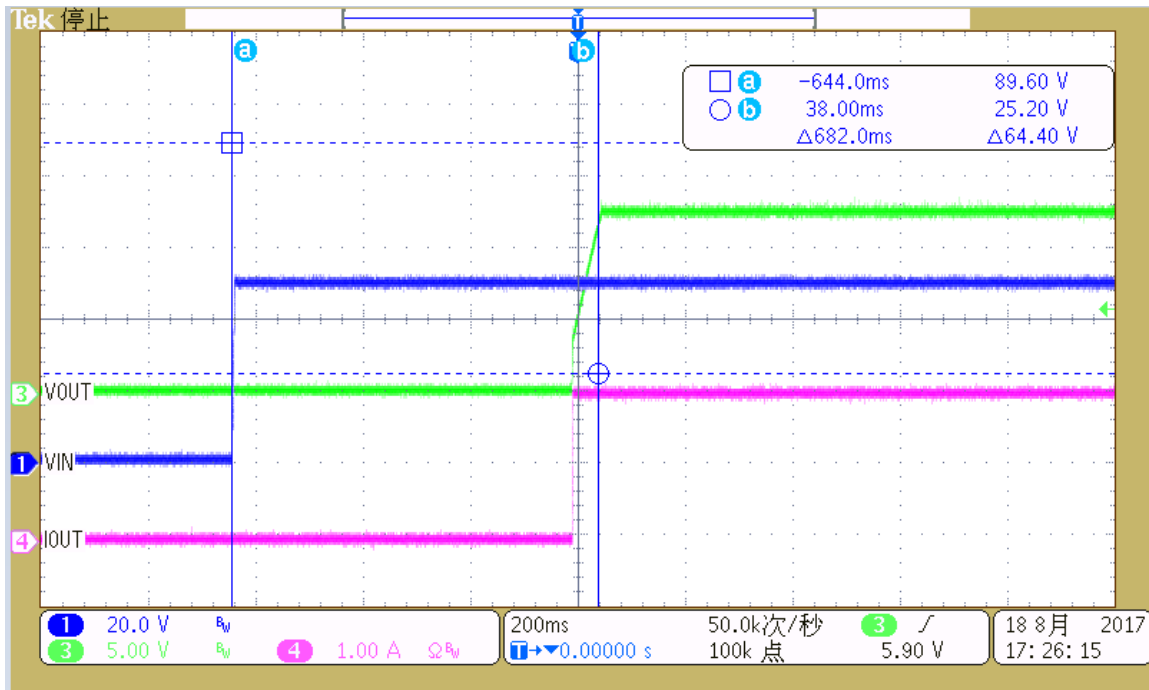
Vin(V)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Efficiency
57.03	0.0001	0.01	11.88	0		
57.03	0.0454	2.59	11.89	0.1921	2.28	88.23
57.01	0.0947	5.40	11.98	0.4003	4.79	88.79
57.01	0.1416	8.07	12.05	0.5963	7.19	89.02
57.00	0.1883	10.73	12.12	0.7903	9.58	89.23
57.00	0.2392	13.63	12.19	1.0022	12.21	89.57
56.98	0.2865	16.32	12.25	1.1972	14.66	89.83
56.98	0.3344	19.05	12.30	1.3922	17.13	89.90
56.97	0.3867	22.03	12.37	1.6041	19.85	90.09
56.97	0.4346	24.76	12.44	1.7953	22.33	90.17
56.97	0.4838	27.56	12.49	1.9913	24.88	90.27



## 2.2: Startup



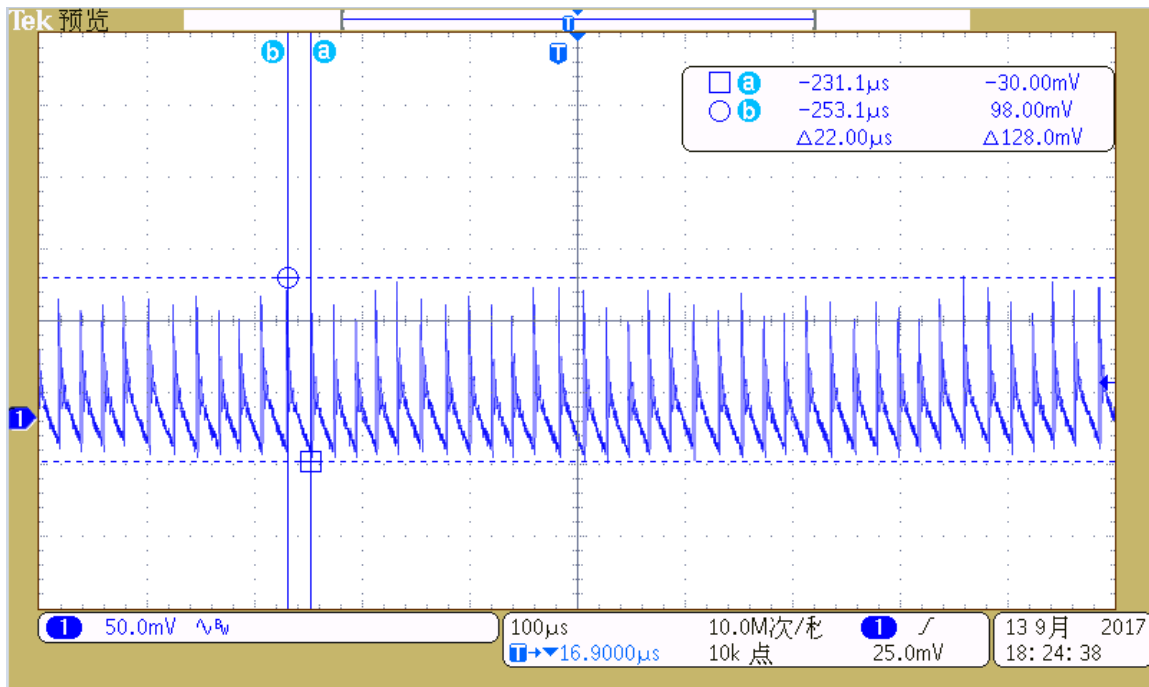
**48Vin Startup with no load**



**48Vin Startup with Full load**

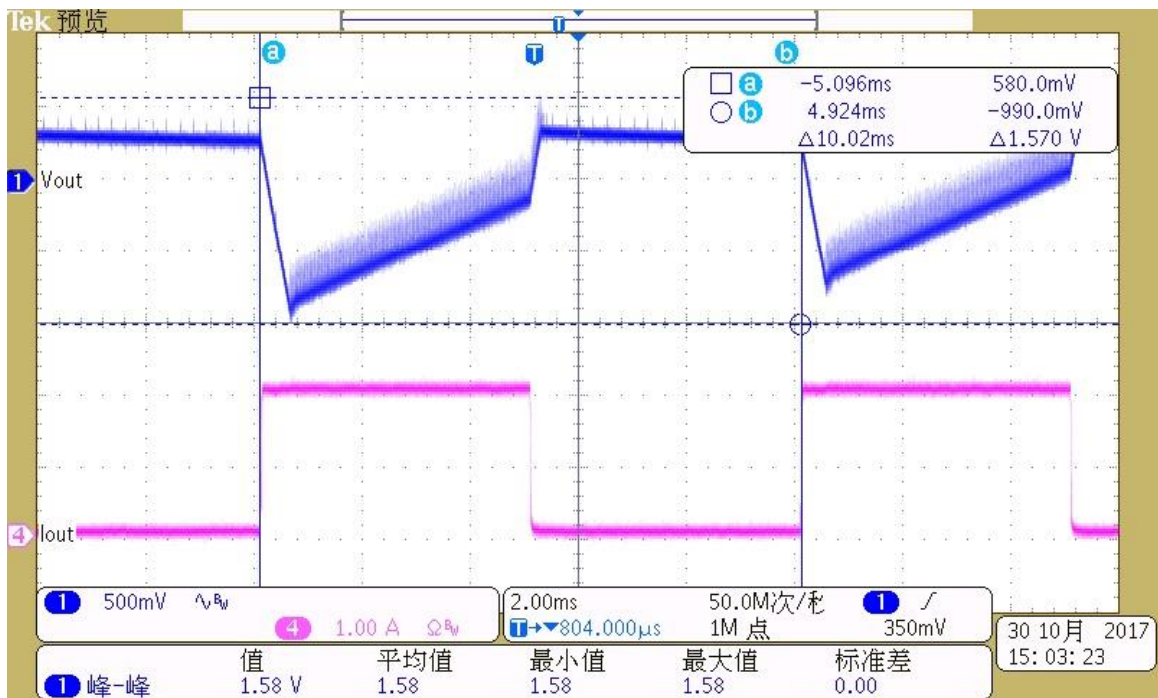
### 2.3: Output Voltage Ripple

**Note: C6 parallels two 0805 X7R/25V ceramic capacitor for the following output voltage ripple**

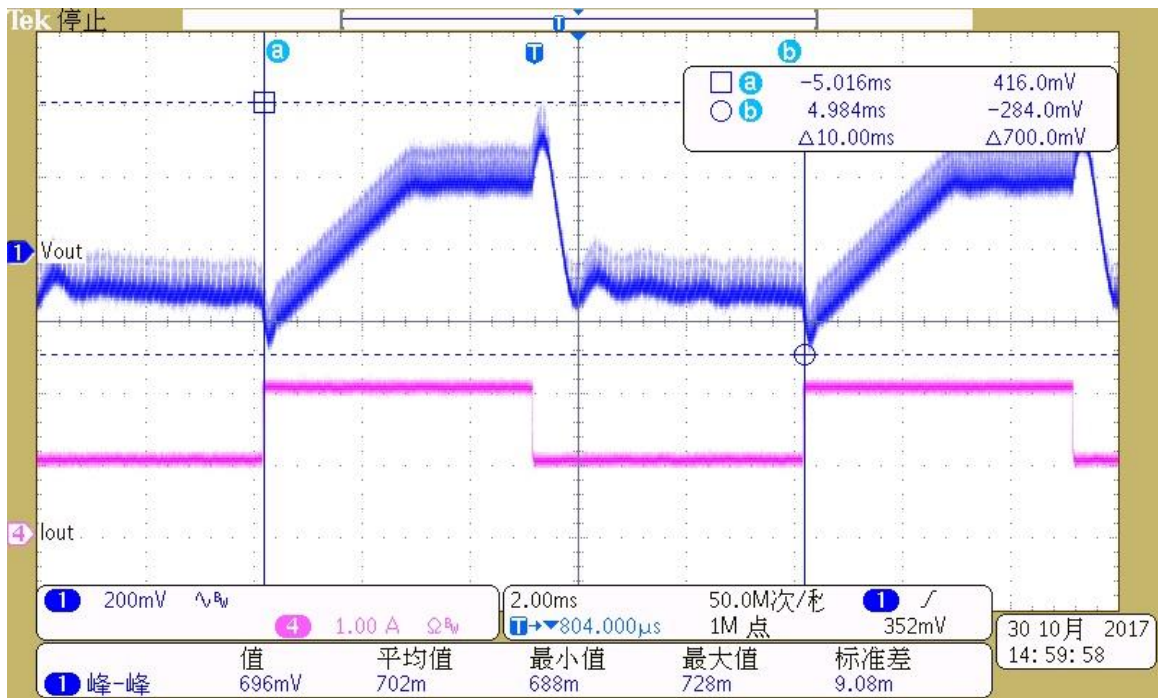


**Test condition: 48Vin 12V/2A full load; Oscilloscope 20MHz Bandwidth**

**2.4: Dynamic Response**

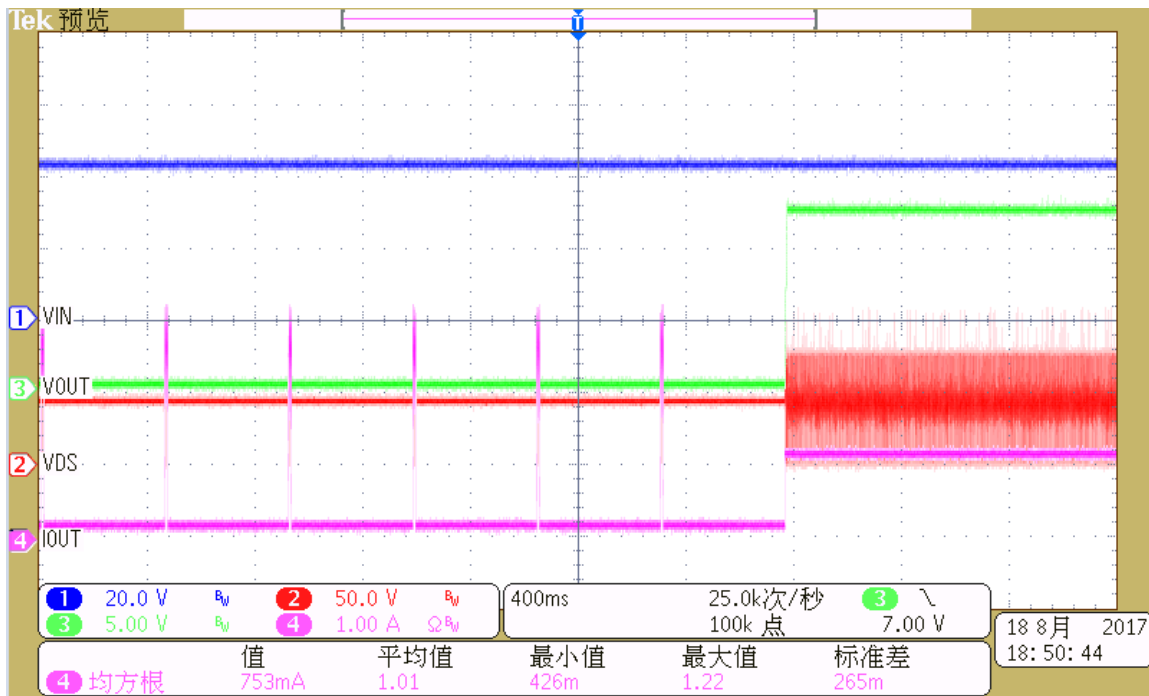


**Test condition: 48Vin, Load step from 0A to 2A(50%-100%), 100Hz cycle, 1A/us**

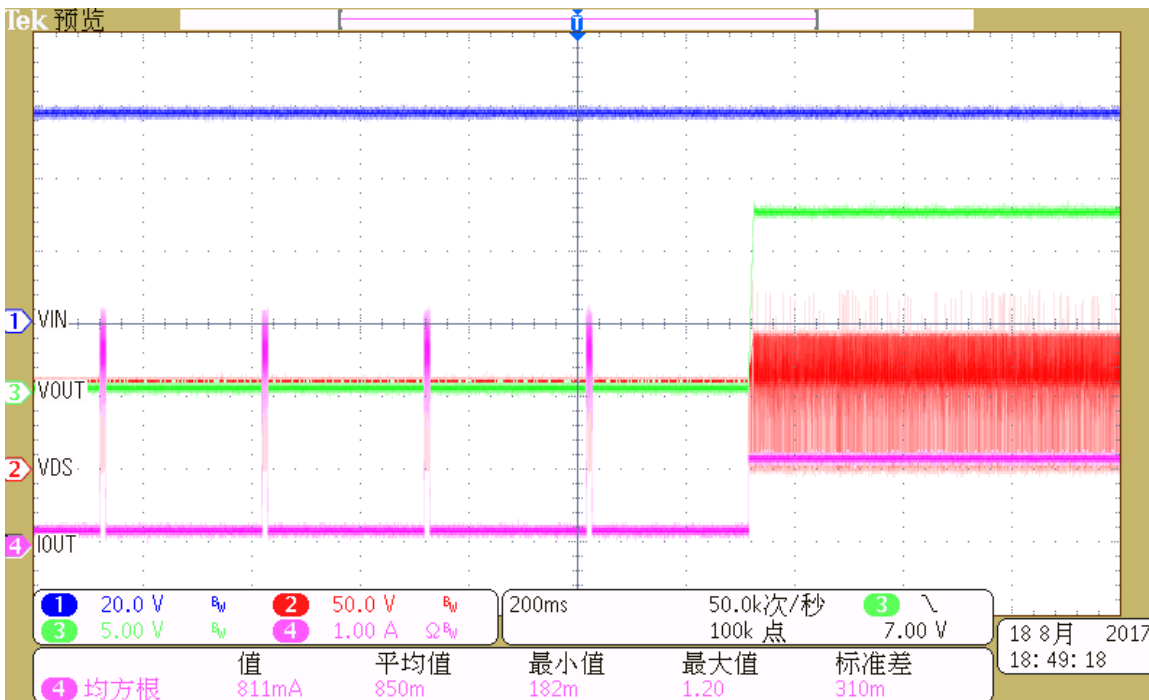


**Test condition: 48Vin, Load step from 1A to 2A(50%-100%), 100Hz cycle, 1A/us**

## 2.5: Output Over Current Protection and Restart

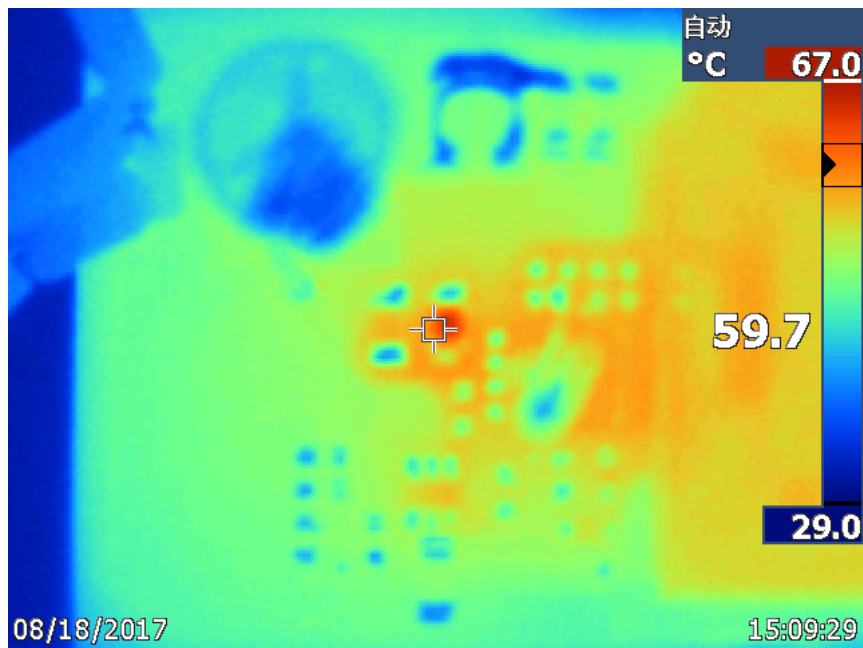


**Vin=42V**



**Vin=57V**

2.6: Thermal image



50V Input, output is 2A load (30 minutes) without fan cooling

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
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