Texas Instruments

PMP4460 Test Procedure

China Power Reference Design

REV A

Dec 3th 2014

1 GENERAL

1.1 PURPOSE

To provide detailed data for evaluating and verifying the EVM.

1.2 REFERENCE DOCUMENTATION

Schematic: PMP4460_SCH_RevA
Assembly: PMP4460_PCB_RevA
BOM

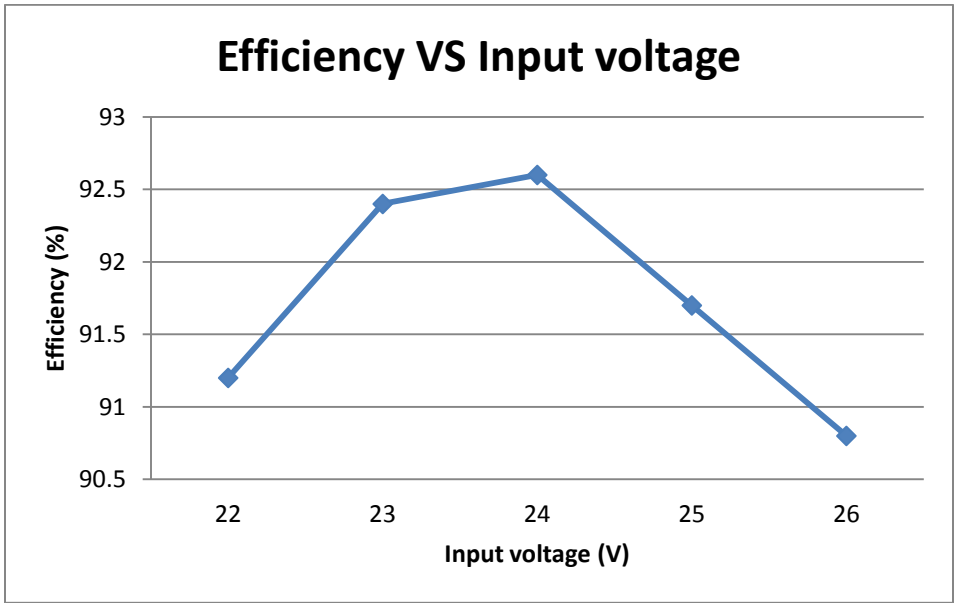
1.3 TEST EQUIPMENTS

Multi-meter(voltage): Fluke 287
Multi-meter(current): Fluke 287
DC Source: GWINSTEK GPS-3303C
Load: ITECH DC ELECTRONIC LOAD
Oscilloscope:Tek DPO3054

2 INPUT CHARACTERISTICS

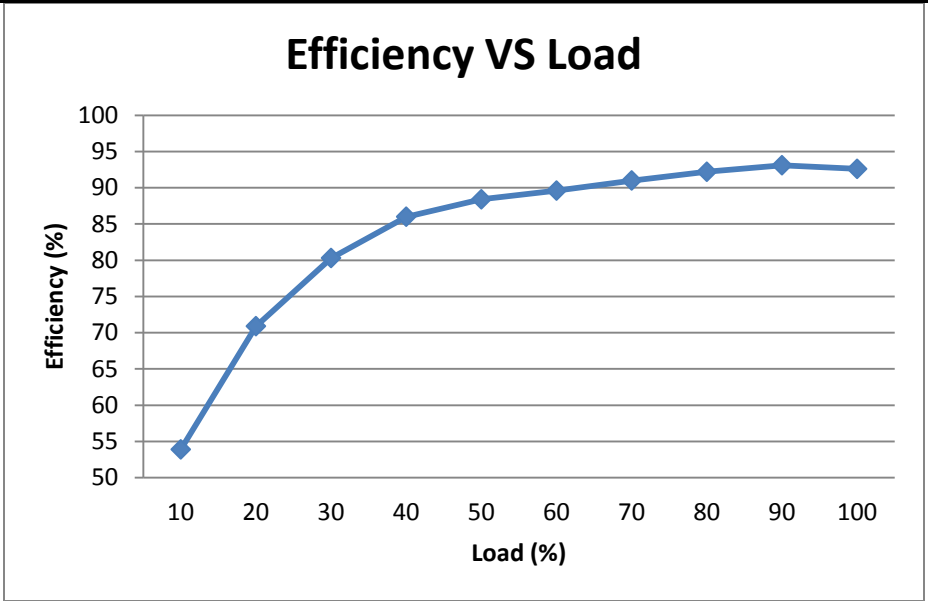
2.1 Full load Efficiency

Vin (V)	Iin(mA)	Vo1(V)	Vo2(V)	Io1(mA)	Io2(mA)	Effi.(%)
22	85.9	23.84	5.31	50	100	**91.2**
23	81.5	24.0	5.32	50	100	**92.4**
24	79.1	24.36	5.39	50	100	**92.6**
25	76.6	24.37	5.38	50	100	**91.7**
26	74.4	24.36	5.39	50	100	**90.8**



2.2 **Efficiency versus output current**(Io1:100%=150mA; Io2: N/A)

Load(%)	Io1(mA)	Io2(mA)	Vin (V)	Iin(mA)	Vo1(V)	Vo2(V)	Effi.(%)
0	0	0	24.01	8	24.68	5.65	N/A
10	5	10	24.01	13.7	24.46	5.49	53.9
20	10	20	23.99	20.8	24.44	5.48	70.9
30	15	30	24.01	27.5	24.43	5.46	80.3
40	20	40	24	34.2	24.43	5.44	86.0
50	25	50	24.01	41.6	24.42	5.44	88.4
60	30	60	24	49.2	24.4	5.43	89.6
70	35	70	23.99	56.5	24.39	5.42	91.0
80	40	80	23.99	63.7	24.39	5.42	92.2
90	45	90	23.99	70.9	24.38	5.41	93.1
100	50	100	24	79.1	24.36	5.39	92.6



3 OUTPUT CHARACTERISTICS

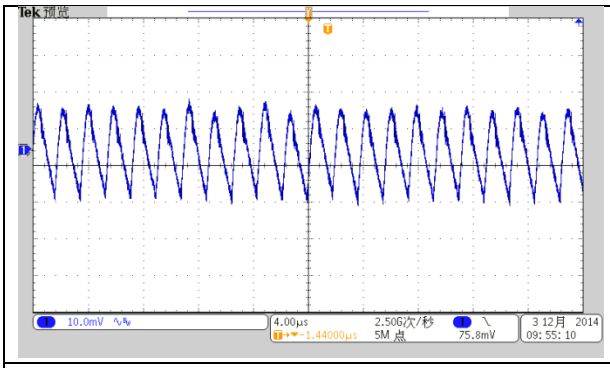
3.1 Line and load Regulation (Io1:100%=50mA; Io2:100%=100mA)

Vin (V)	Io1,Io2=10%		Io1,Io2=30%		Io1,Io2=50%		Io1,Io2=70%		Io1,Io2=100%	
	Vo1 (V)	Vo2 (V)	Vo1 (V)	Vo2 (V)	Vo1 (V)	Vo2 (V)	Vo1 (V)	Vo2 (V)	Vo1 (V)	Vo2 (V)
22	24.01	5.37	23.96	5.35	23.95	5.32	23.92	5.30	23.84	5.31
24	24.26	5.43	24.17	5.40	24.19	5.39	24.19	5.36	24.36	5.39
26	24.47	5.48	24.38	5.45	24.40	5.44	24.41	5.42	24.36	5.39

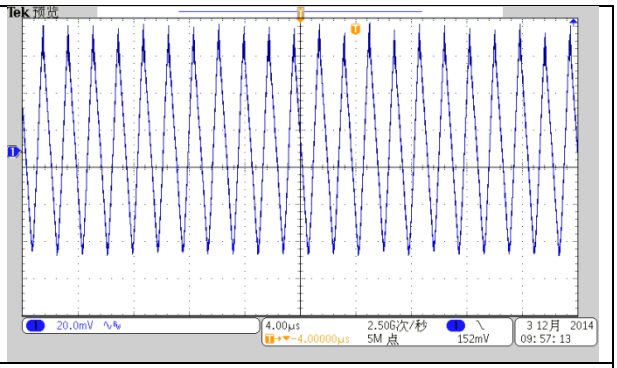
Vo1 Line Regulation Ratio: 2.6%; and Load Regulation Ratio: 0.4%;
Vo2 Line Regulation Ratio: 3.4%; and Load Regulation Ratio: 0.8%

3.2 <u>Ripple and noise</u>(Io1:100%=50mA; Io2:100%=100mA)

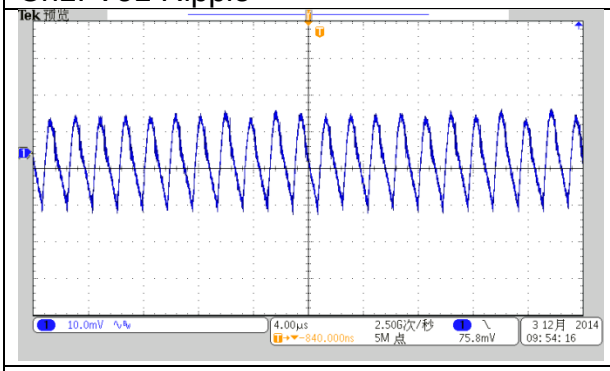
Vin (V)	Io1,Io2=10% Load		Io1,Io2=100% Load	
	Vo1 (mV)	Vo2 (mV)	Vo1 (mV)	Vo2 (mV)
22	20.1	5.1	113.4	21.4
24	21.2	5.4	114.1	20.8
26	23.4	5.0	112.8	21.9



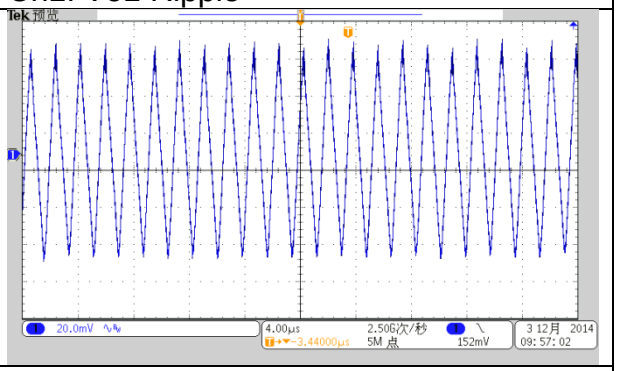
Vin=22V Io=10%Load
Ch1: Vo1 Ripple



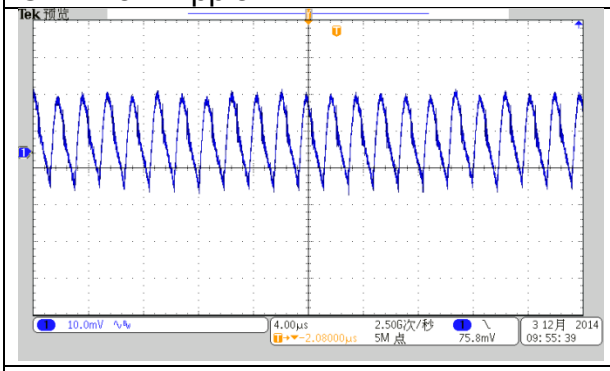
Vin=22V Io=100%Load
Ch1: Vo1 Ripple



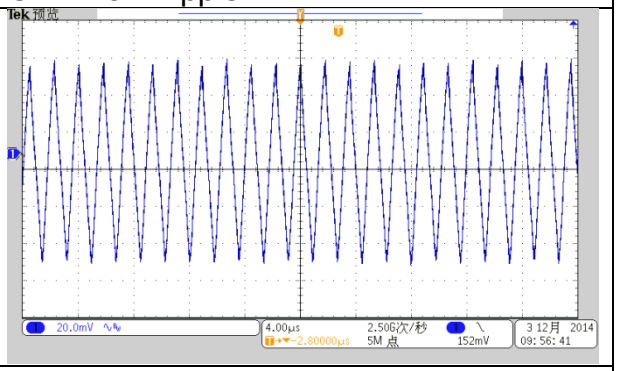
Vin=24V Io=10%Load
Ch1: Vo1 Ripple



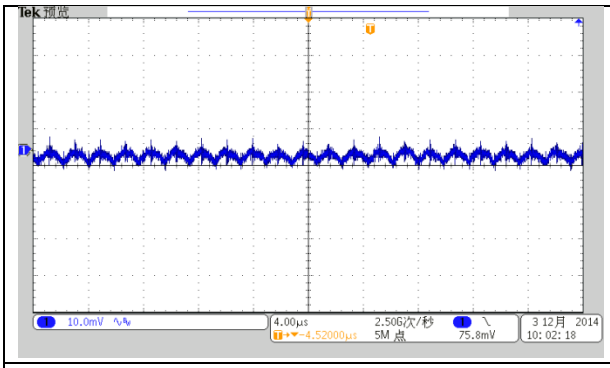
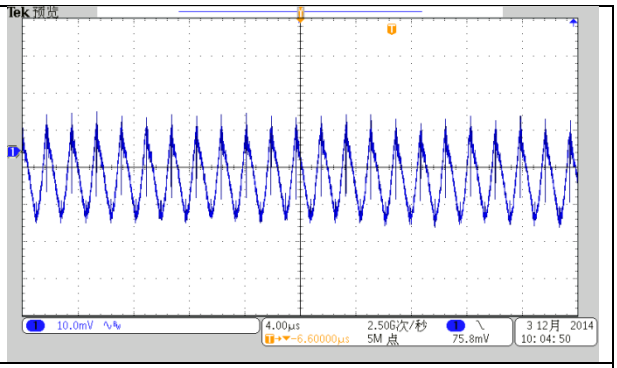
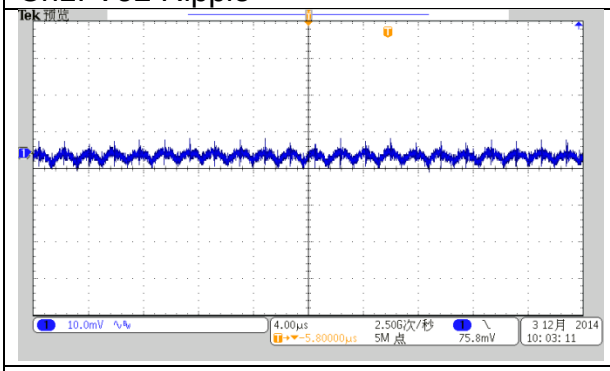
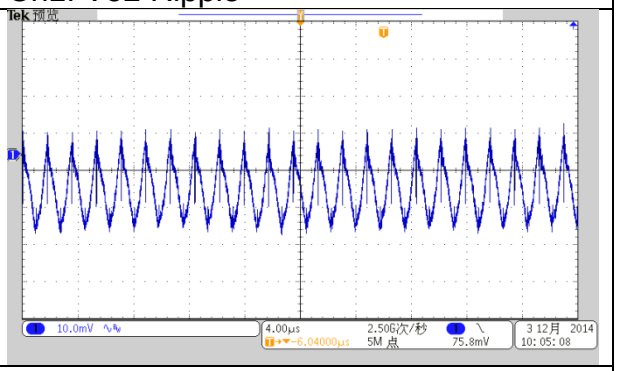
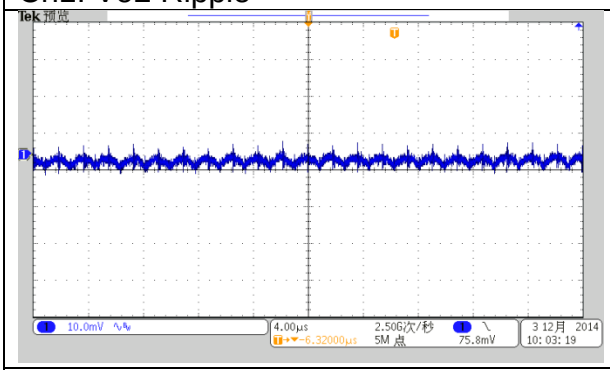
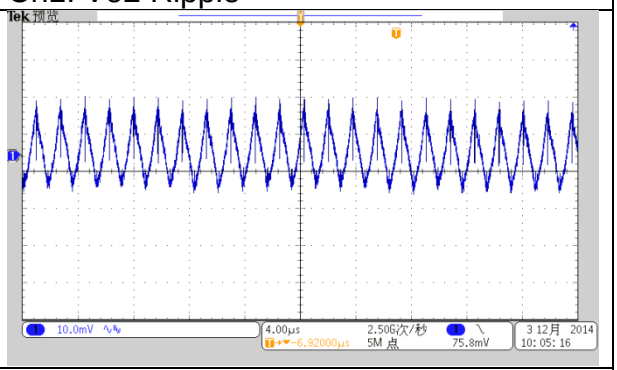
Vin=24V Io=100%Load
Ch1: Vo1 Ripple



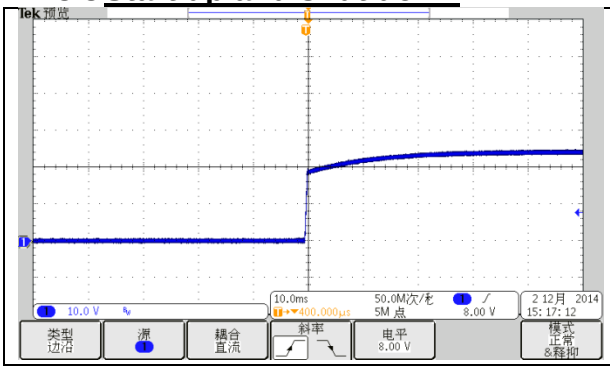
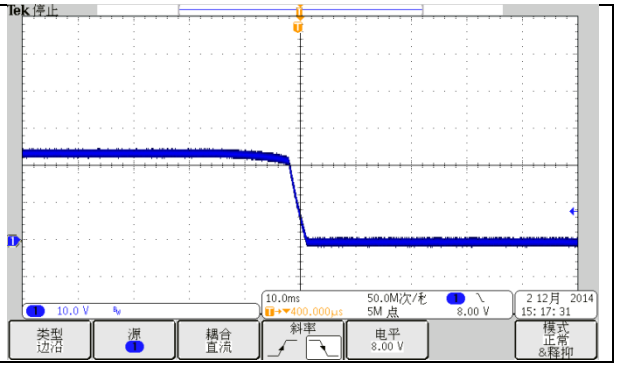
Vin=26V Io=10%Load
Ch1: Vo1 Ripple

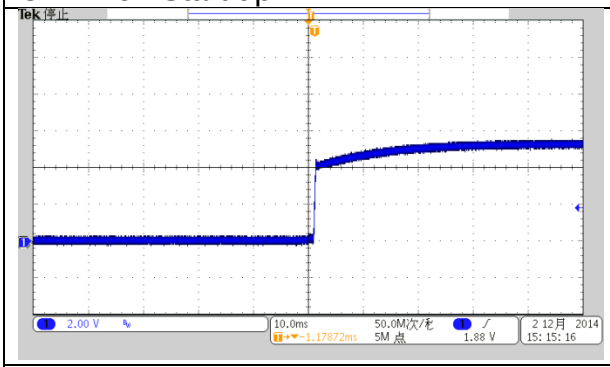
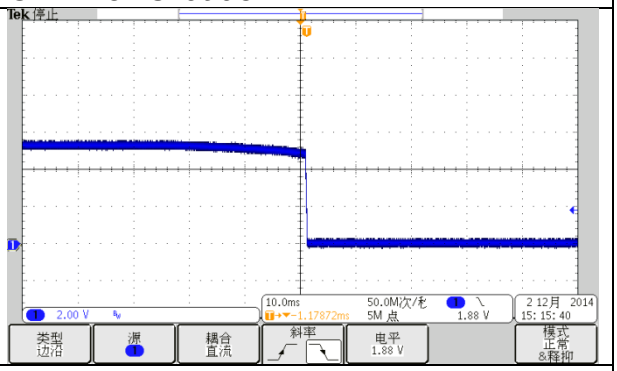


Vin=26V Io=100%Load
Ch1: Vo1 Ripple

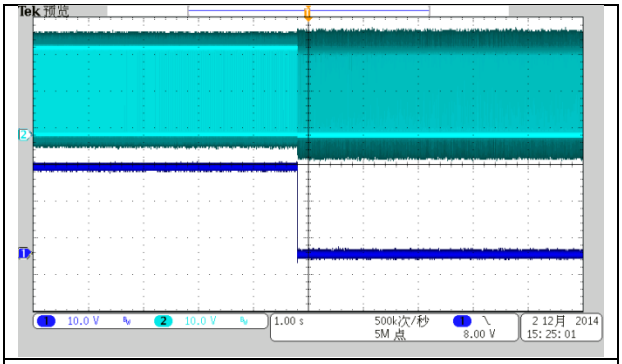
	
Vin=22V Io=10%Load Ch1: Vo2 Ripple	Vin=22V Io=100%Load Ch1: Vo2 Ripple
	
Vin=24V Io=10%Load Ch1: Vo2 Ripple	Vin=24V Io=100%Load Ch1: Vo2 Ripple
	
Vin=26V Io=10%Load Ch1: Vo2 Ripple	Vin=26V Io=100%Load Ch1: Vo2 Ripple

3.3 Start up and shut down

Vin=24V Io=100%Load Ch1: Vo1 Start up	Vin=24V 100%Load Ch1: Vo1 shut down
	
Vin=24V Io=100%Load Ch1: Vo2 Start up	Vin=24V 100%Load Ch1: Vo2 shut down

3.4 **Output short protection**(Io1:100%=150mA; Io2:100%=50mA)


Vin=24V Io=100%Load Vo1 from full load to short Ch1: Vo1 Ch2: SW Pin of LM25017

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