Texas Instruments

PMP4480 Test Procedure

China Power Reference Design

REV A

5/21/2015

1 GENERAL

1.1 PURPOSE

To provide detailed data for evaluating and verifying the PMP44480

1.2 REFERENCE DOCUMENTATION

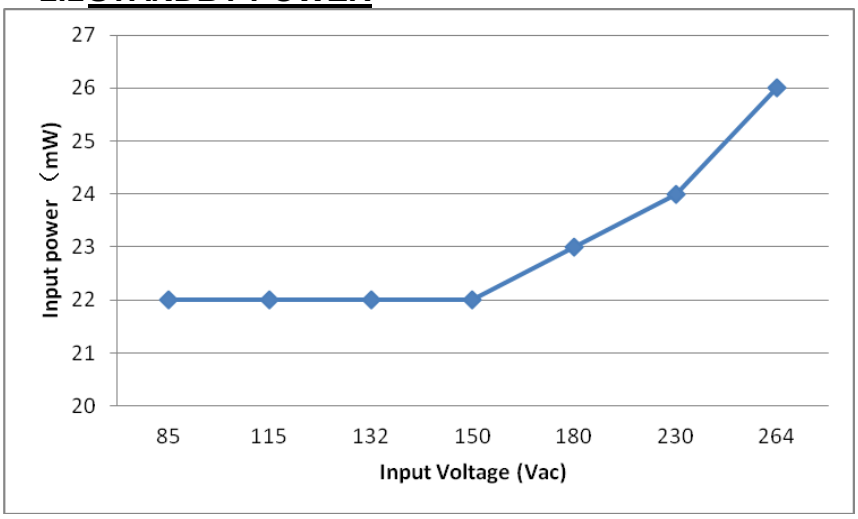
Schematic PMP4480_SCH.PDF
Assembly PMP4480_PCB.PDF
BOM
Promotion tools

1.3 TEST EQUIPMENTS

Power-meter: YOKOGAWA WT210
Multi-meter(current): Fluke 8845A
Multi-meter(voltage): Fluke 187
AC Source: Chroma 61530
Electronic load: Chroma 63105A module

2 INPUT CHARACTERISTICS

2.1 STANDBY POWER



2.2 EFFICIENCY DATA

85Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.85	0.2	12.05	84.6
5.69	0.4	12.046	84.7
8.6	0.6	12.062	84.2
11.54	0.8	12.08	83.7
14.4	1	12.09	84.0

115Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.822	0.2	12.016	85.2
5.6	0.4	12.03	85.9
8.46	0.6	12.04	85.4
11.309	0.8	12.07	85.4
14.088	1	12.08	85.7

132Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.844	0.2	12.02	84.5
5.6	0.4	12.031	85.9
8.46	0.6	12.042	85.4
11.25	0.8	12.072	85.8
14.076	1	12.09	85.9

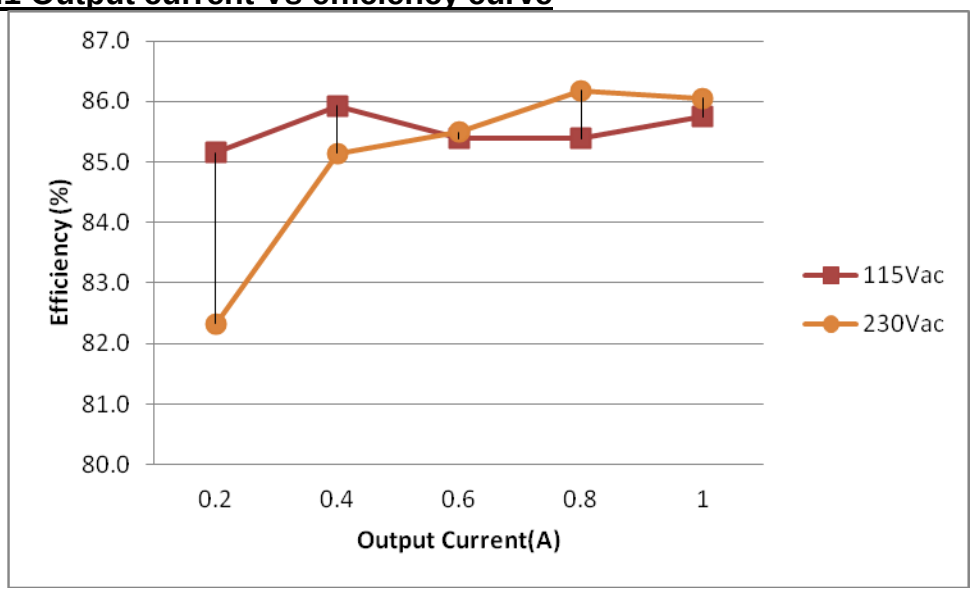
150Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.83	0.2	12.02	84.9
5.618	0.4	12.033	85.7
8.41	0.6	12.04	85.9
11.26	0.8	12.063	85.7
14.029	1	12.096	86.2

180Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.86	0.2	12.02	84.1
5.6	0.4	12.03	85.9
8.427	0.6	12.039	85.7
11.2	0.8	12.059	86.1
13.99	1	12.087	86.4

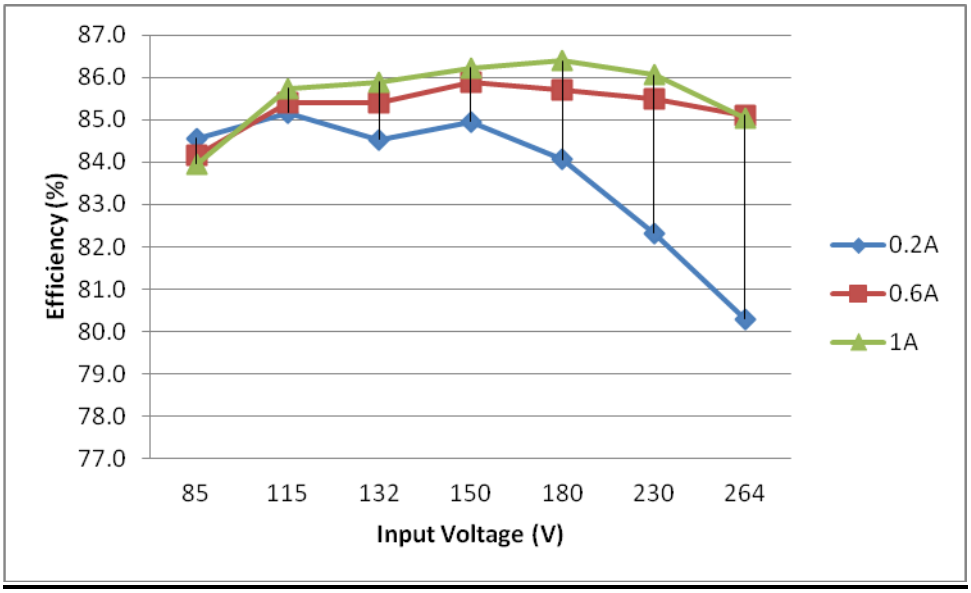
230Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
2.92	0.2	12.02	82.3
5.65	0.4	12.026	85.1
8.45	0.6	12.04	85.5
11.19	0.8	12.054	86.2
14.04	1	12.082	86.1

264Vac			
Pin(W)	Io(A)	Vo(V)	Eff. (%)
3	0.2	12.045	80.3
5.72	0.4	12.053	84.3
8.51	0.6	12.07	85.1
11.33	0.8	12.078	85.3
14.23	1	12.099	85.0

2.2.1 Output current Vs efficiency curve



2.2.2 Input voltage Vs efficiency curve

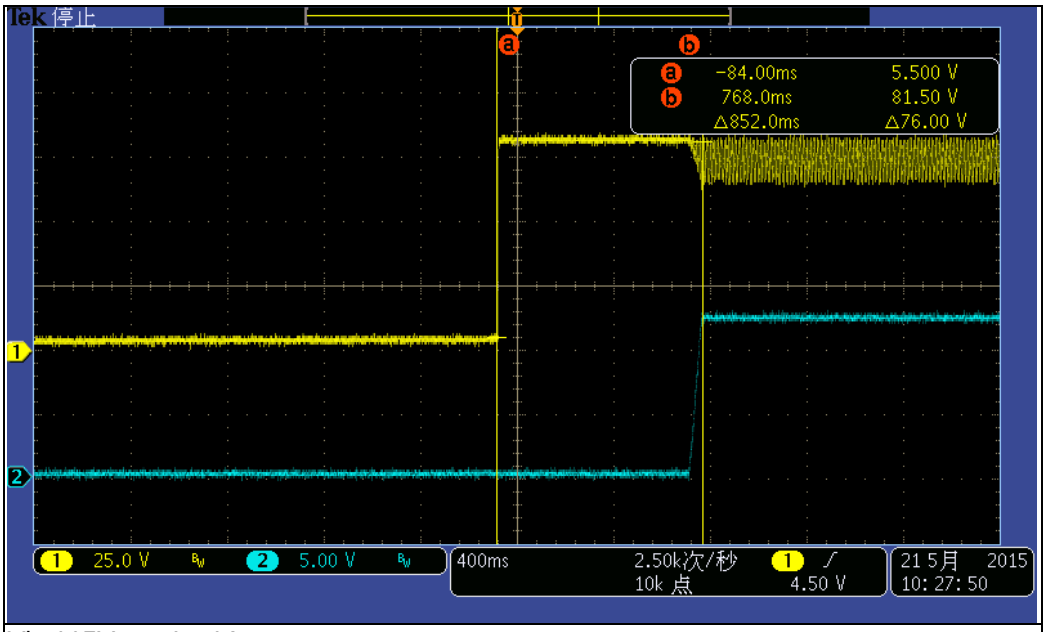


2.3 INPUT CURRENT

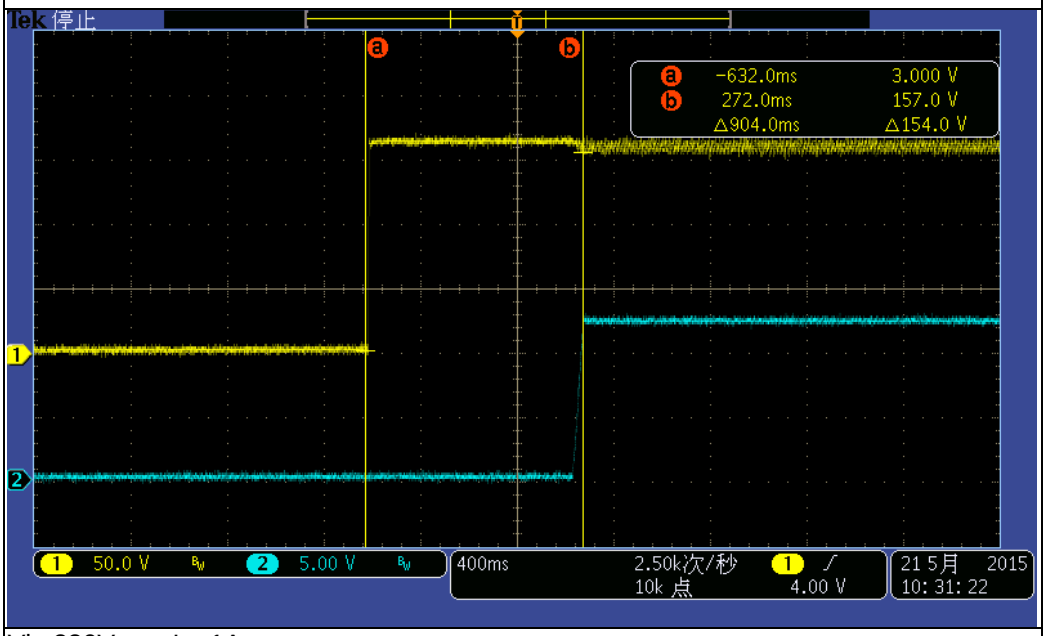
Vin(Vac)	Freq(Hz)	Iin(Arms)	Pass/Fail
85	60	**0.288**	

2.4 STARTUP TIME

Input voltage	Output current	Startup time	Pass/Fail
115Vac	2.4A	**852mS**	
230Vac	2.4A	**904mS**	



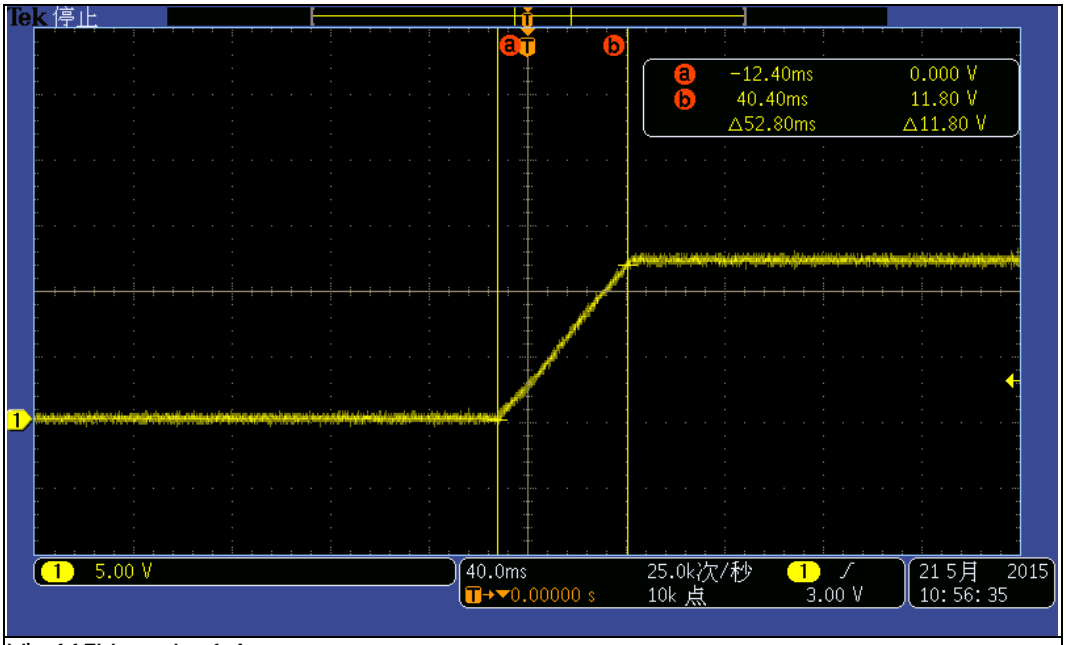
Vin:115Vac Io: 1A
Ch1: The voltage after bridge diode
Ch2: Output voltage



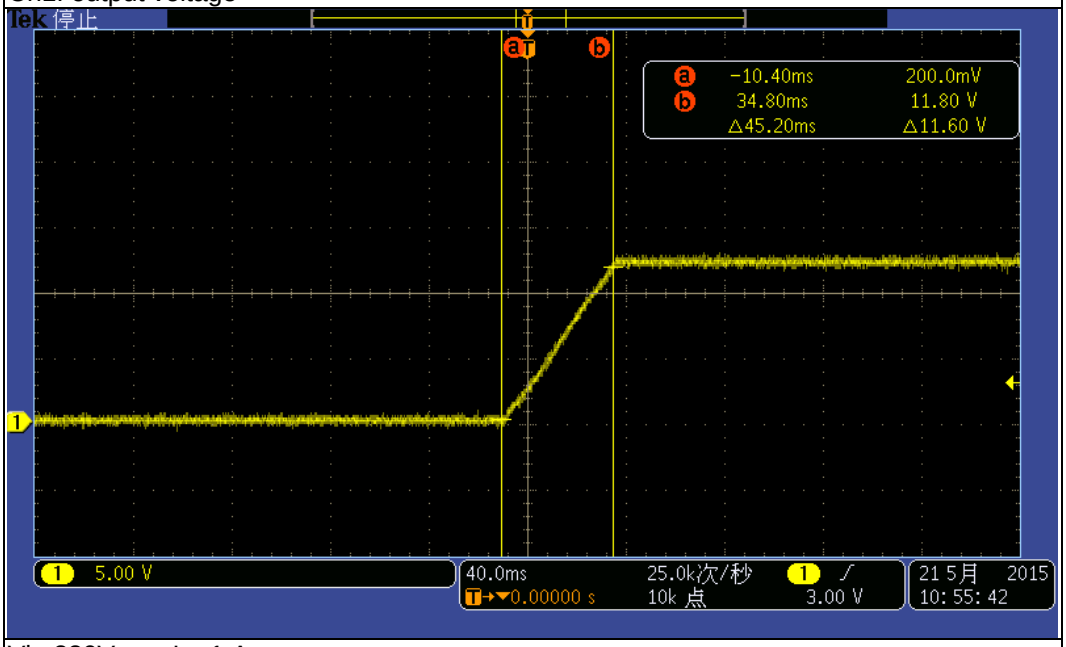
Vin:230Vac Io: 1A
Ch1: The voltage after bridge diode
Ch2: Output voltage

2.5 OUTPUT VOLTAGE RISE TIME

Input voltage	Output current	Startup time	Pass/Fail
115Vac	2.4A	**52.8mS**	
230Vac	2.4A	**45.2mS**	



Vin:115Vac Io: 1 A
Ch1: output voltage

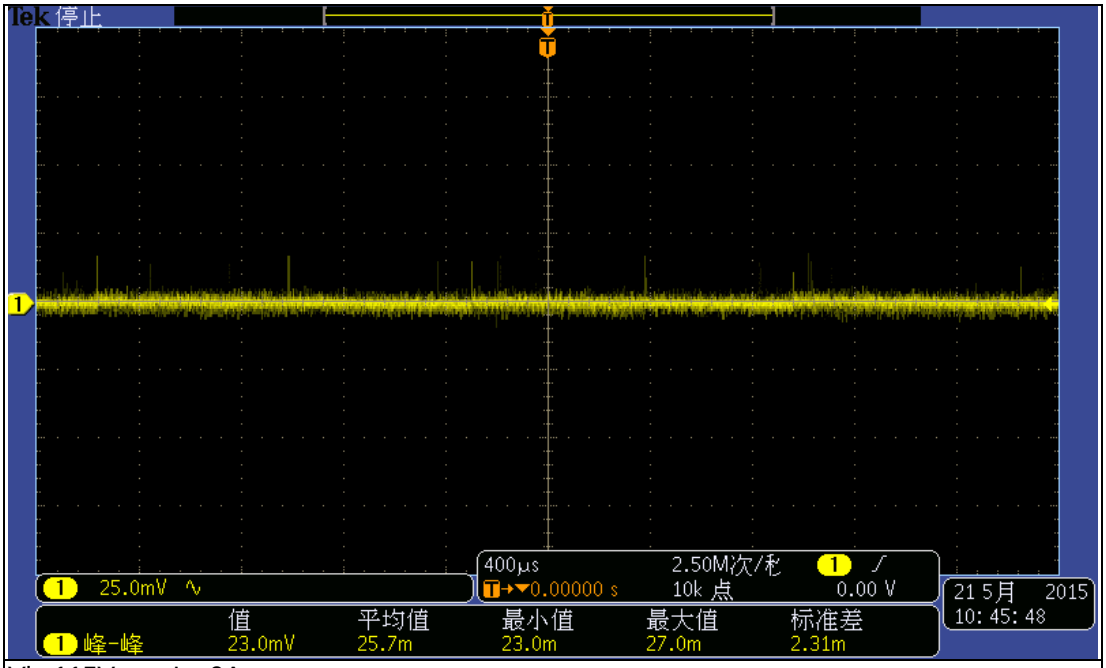


Vin:230Vac Io: 1 A
Ch1: output voltage

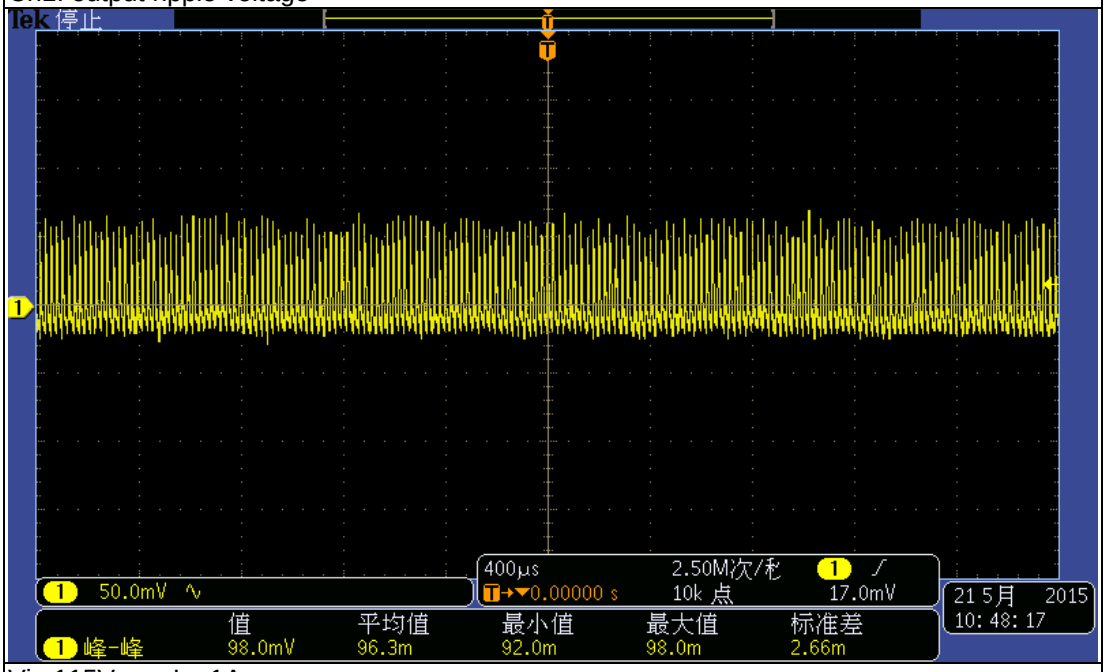
2.6 RIPPLE VOLTAGE

Input voltage	Output current	Ripple voltage	Pass/Fail
115Vac	0A	**23mV**	
115Vac	1A	**98mV**	
230Vac	0A	**27mV**	

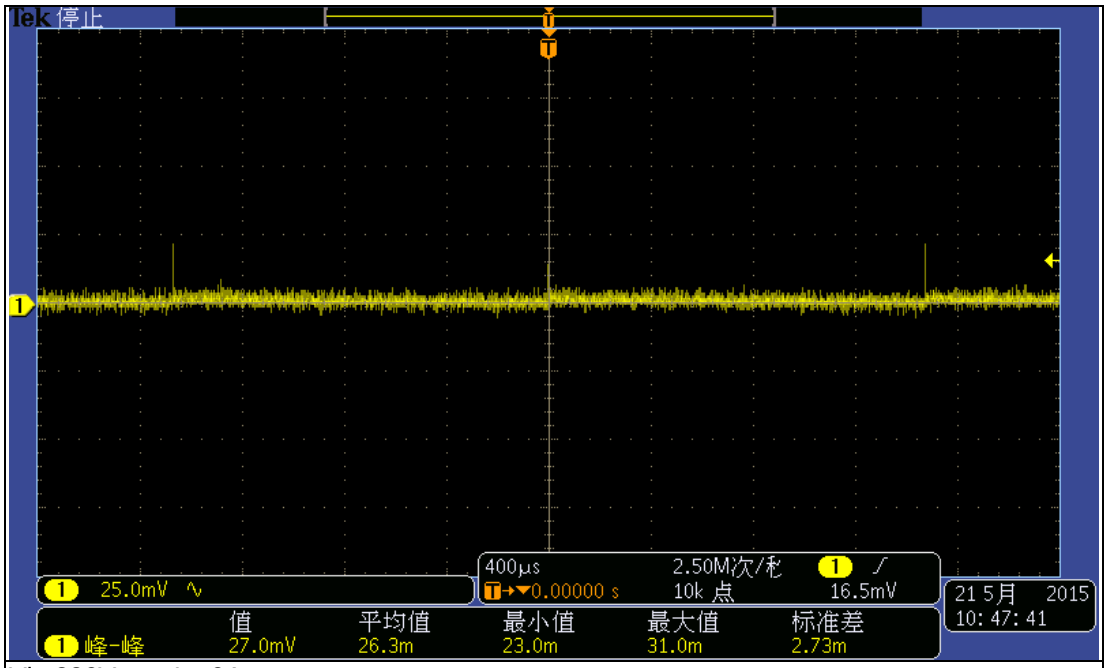
230Vac	1A	**108mV**	



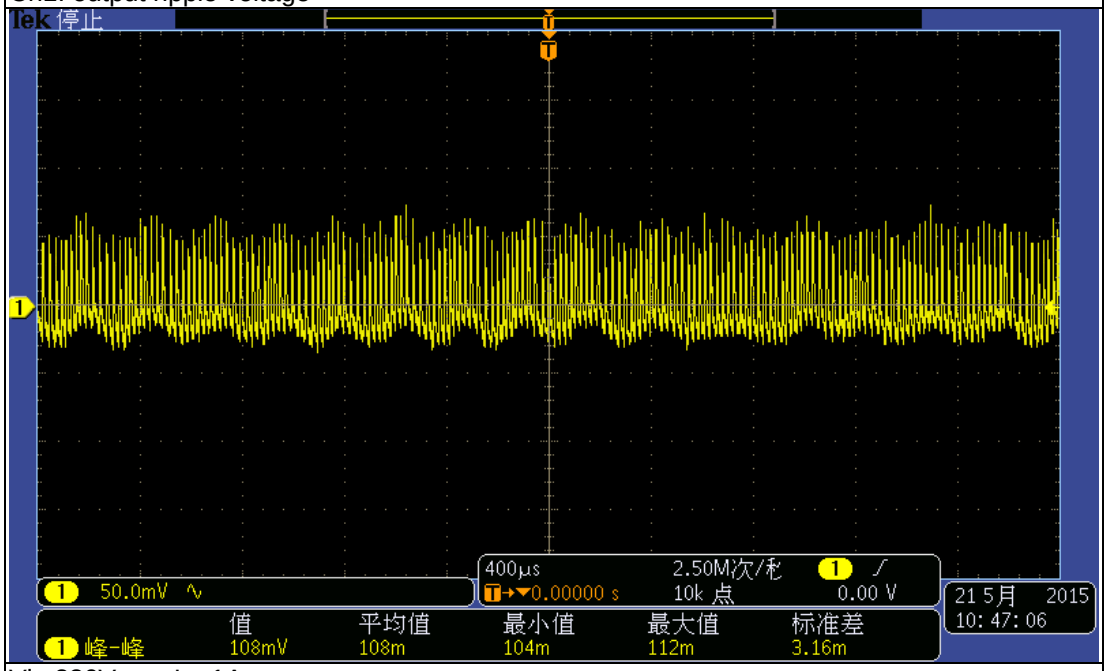
Vin:115Vac Io: 0A
Ch1: output ripple voltage



Vin:115Vac Io: 1A
Ch1: output ripple voltage



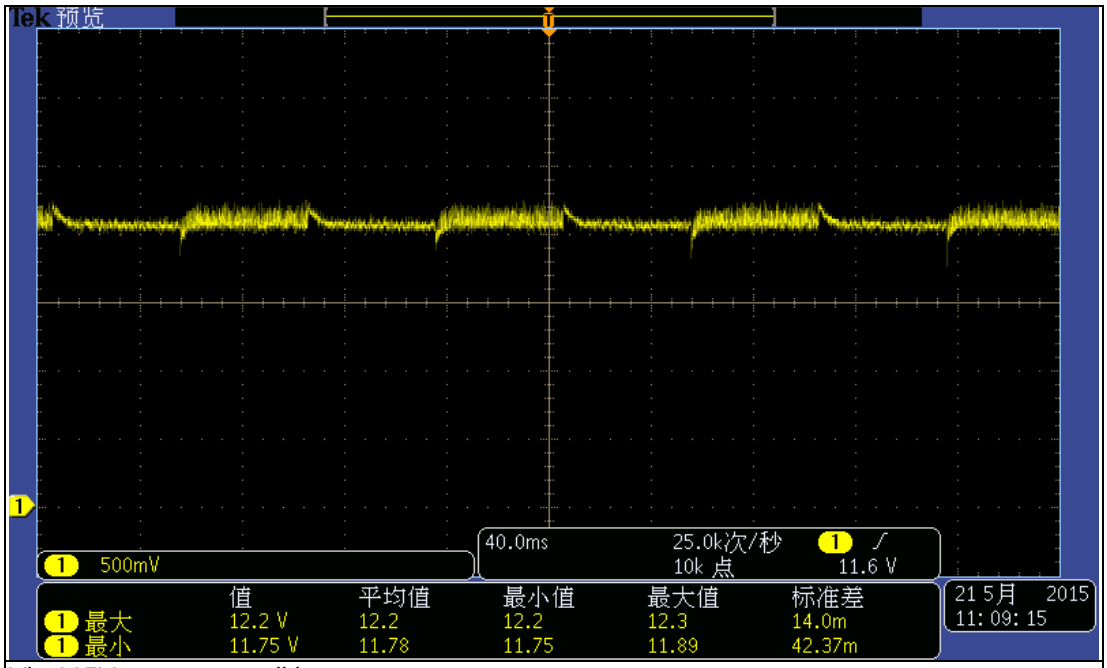
Vin:230Vac Io: 0A
Ch1: output ripple voltage



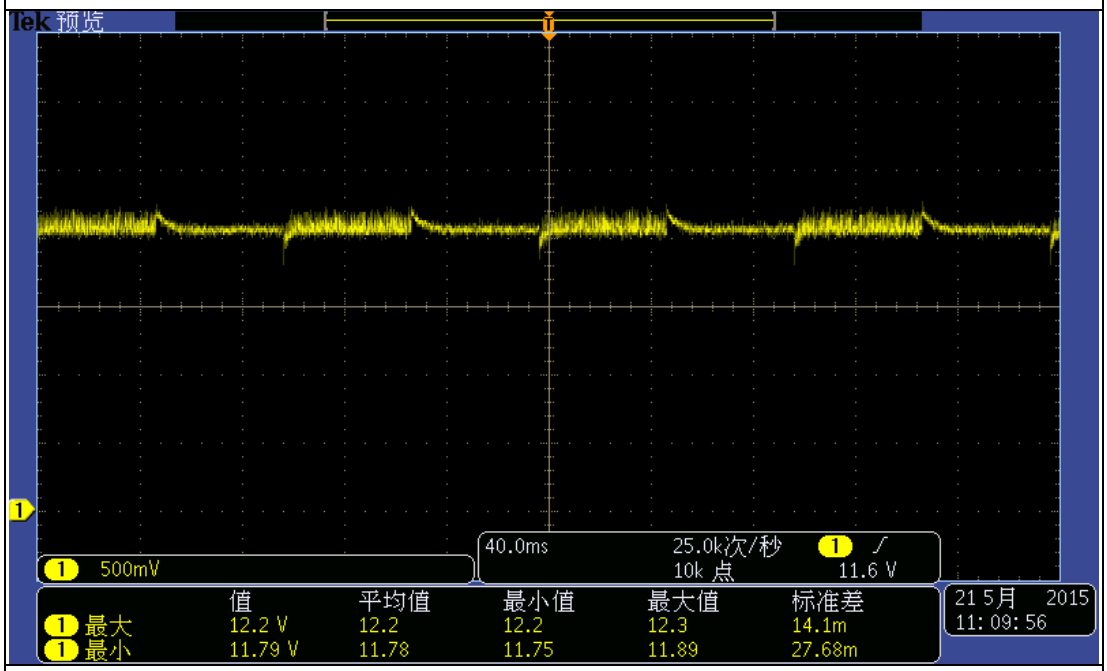
Vin:230Vac Io: 1A
Ch1: output ripple voltage

2.7 DYNAMIC RESPONSE

Input voltage	Output current	Max voltage	Min voltage
115Vac	5%-95% of full load	**12.2V**	**11.75V**
230Vac	5%-95% of full load	**12.2V**	**11.79V**



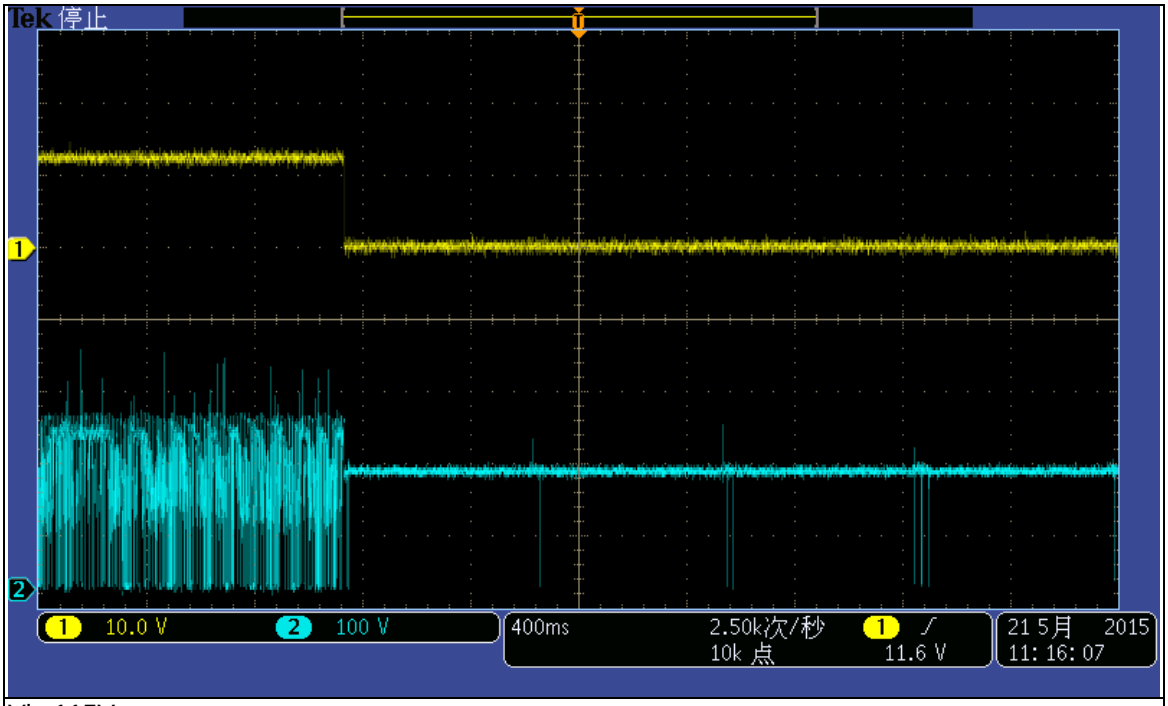
Vin:115Vac test condition: 5%-95% of full load, 0.1A/us, 100ms cycle
Ch1: output voltage



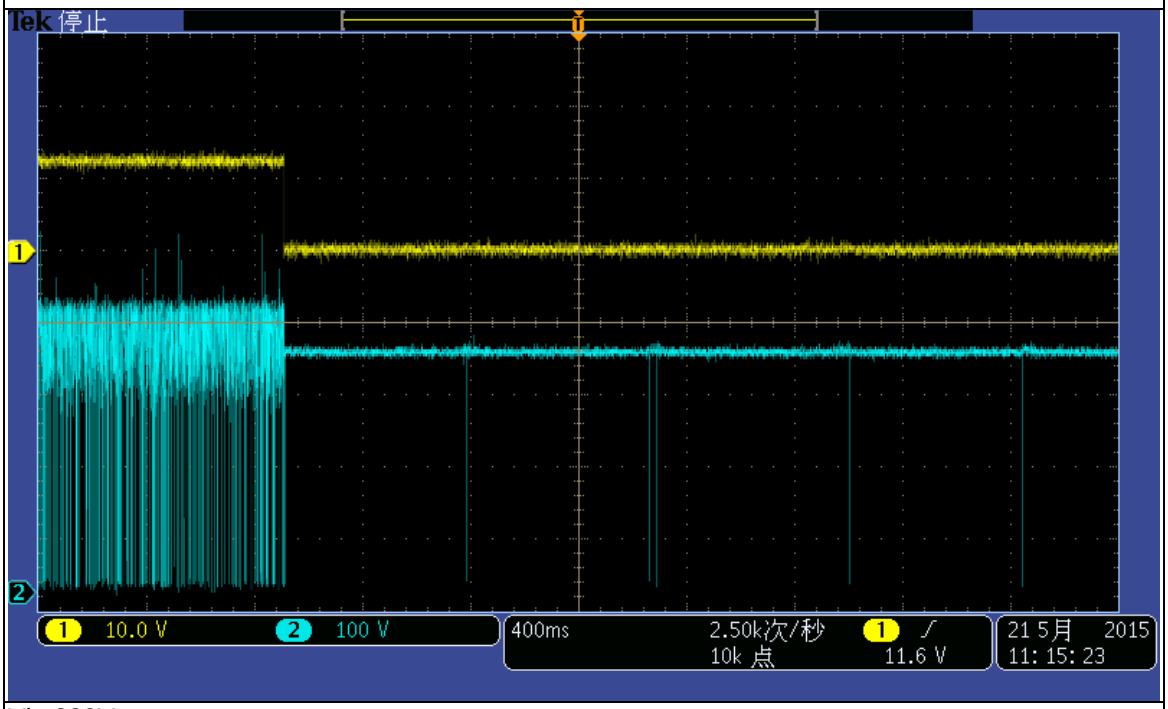
Vin:230Vac test condition: 5%-95% of full load, 0.1A/us, 100ms cycle
Ch1: output voltage

2.8 OUTPUT SHORT PROTECTION

Input voltage	Output short protection
115&230Vac	**Hiccup up mode**



Vin:115Vac
CH1: Output voltage
CH2: Vds of MOSFET



Vin:230Vac
CH1: Output voltage
CH2: Vds of MOSFET

3 EMI Test

EMI TEST REPORT

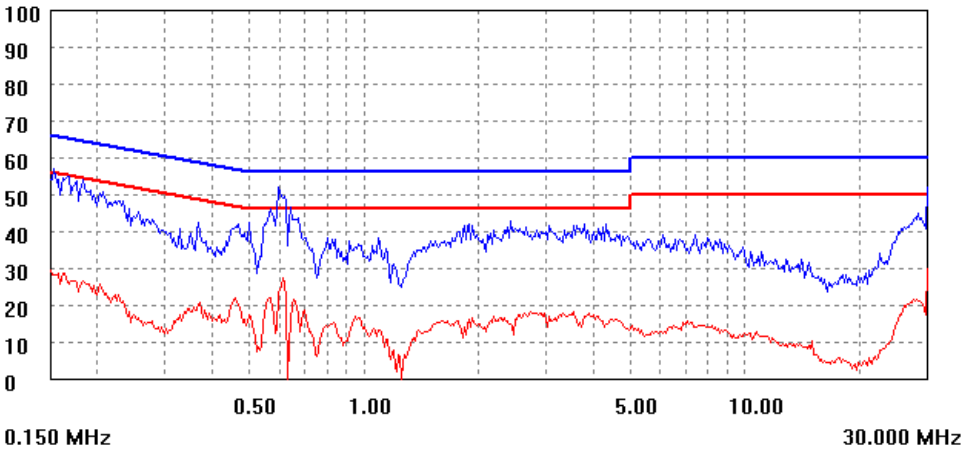
parameter

Organization:	Operator:	EUT:
Place:	Time: 2015/4/22/14:30	Test equipment:KH3939
Detector: PK+AV	Test-time(ms): 30	SN: 1139203
Limit: EN55022B	Transductor(PK/AV): 10 / 10	
Remark:		

freq, step

Start(MHz)	End(MHz)	Step(MHz)
0.150	2.000	0.002
2.000	10.000	0.010
10.000	30.000	0.025

scan result



Vin: 115Vac, Io: 1A

EMI TEST REPORT

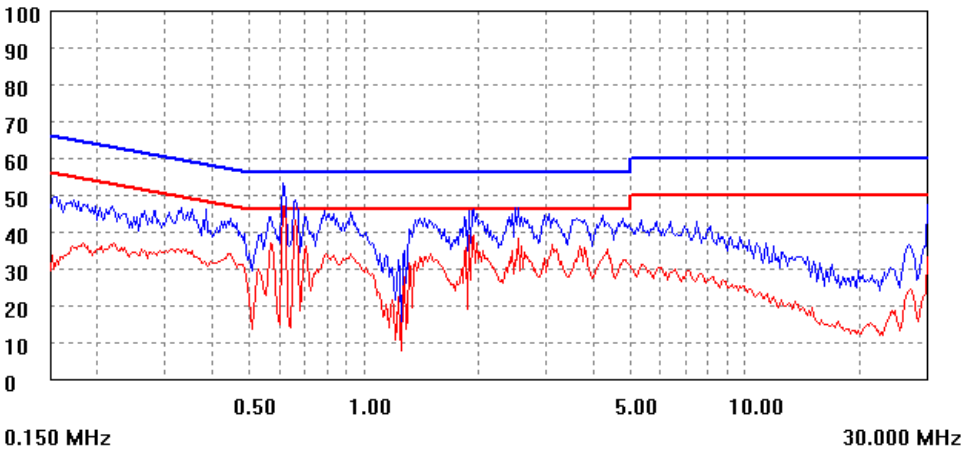
parameter

Organization:		Operator:		EUT:	
Place:		Time:	2015/4/22/14:32	Test equipment:	KH3939
Detector:	PK+AV	Test-time(ms):	30	SN:	1139203
Limit:	EN55022B	Transductor(PK/AV):	10 / 10		
Remark:					

freq, step

Start(MHz)	End(MHz)	Step(MHz)
0.150	2.000	0.002
2.000	10.000	0.010
10.000	30.000	0.025

scan result



Vin: 230Vac, Io: 1A

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