Design PMP4444 Test Results

1 GENERAL

1.1 PURPOSE

The PMP4444 is a 65W TV reference design using the primary-side regulation UCC28630D. The test report presents the standby power, efficiency and related electrical performance.

1.2 REFERENCE DOCUMENTATION

Schematic: PMP4444E1(001)_Sch.PDF
PCB: PMP4444_RevA.PcbDoc
BOM: PMP4444E1(001)_TI-BOM.PDF

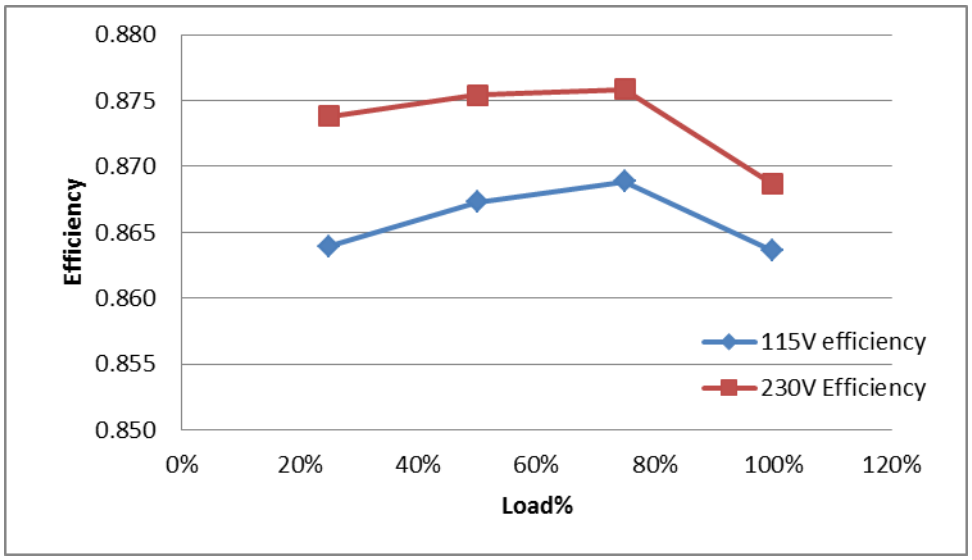
1.3 TEST EQUIPMENTS

Multi-meter (current): Fluke 287C*2
Multi-meter (voltage): Agilent 34401A
AC Source: Chroma 61503
E-Load: Chroma 63101 module

2 Performance data and waveform

2.1 EFFICIENCY

Vin	Pin	Vo1	Io1	Vo2	Io2	Po	Eff
115	19.43	11.530	0.50	23.960	0.46	16.786	0.864
	38.66	11.590	1.00	24.110	0.91	33.530	0.867
	57.70	11.586	1.50	24.084	1.36	50.133	0.868
	77.03	11.586	2.00	24.084	1.80	66.523	0.863
230	19.24	11.562	0.50	23.980	0.46	16.811	0.873
	38.27	11.590	1.00	24.080	0.91	33.502	0.875
	57.06	11.610	1.50	24.120	1.35	49.977	0.875
	76.67	11.600	2.00	24.110	1.80	66.598	0.868



2.2 No-Load Power Loss

No-Load Power Loss	P1	P2
Vin	0W	12V/16mA
240VAC	73mW	330mW

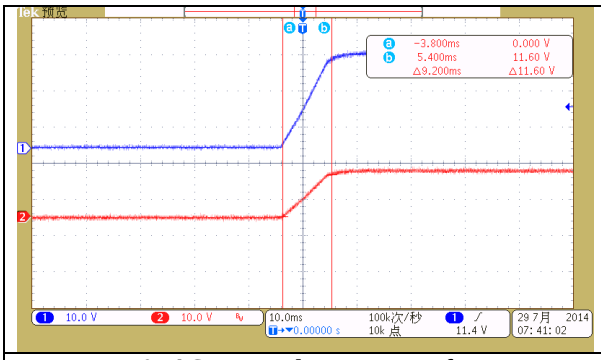
2.3 Cross Regulation

220VAC	12/0A	12V/1A	12V/1.5A	12V/2A	12V/2.5A	12V/3A
24V/0.2A	24.22	24.32	24.41	24.5	25.11	25.95

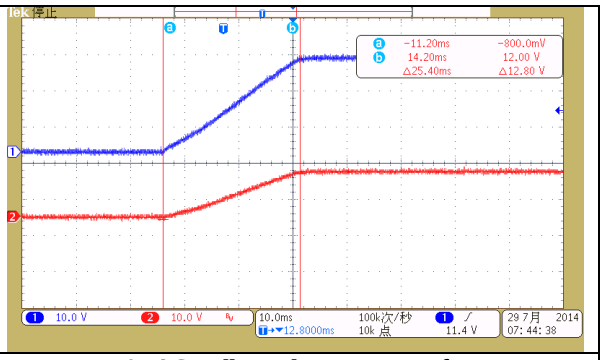
220VAC	24V/0A	24V/0.5A	24V/0.8A	24V/0.9A	24V/1A	24V/1.3A
12V/0A	12.18	12.23	12.33	12.34	12.35	12.35

2.4 Start Up

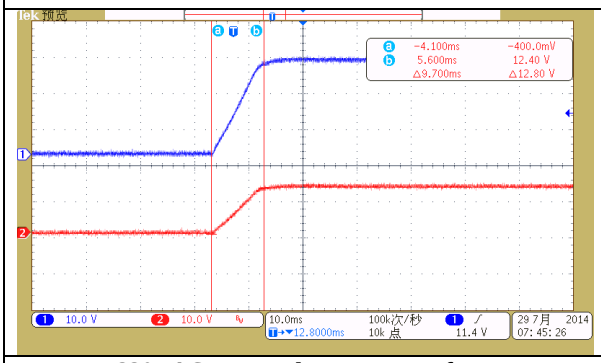
Ch1: 24V output
Ch2:12V output



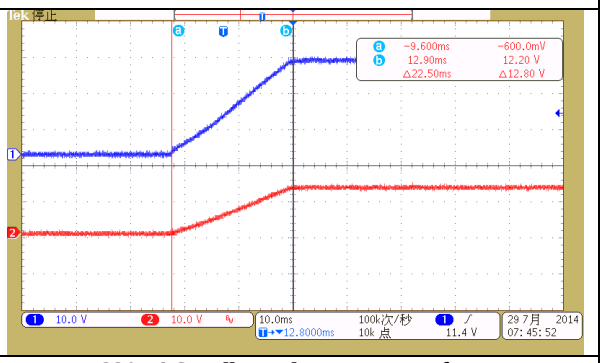
110VAC No-Load turn-on waveform



110VAC Full-Load turn-on waveform

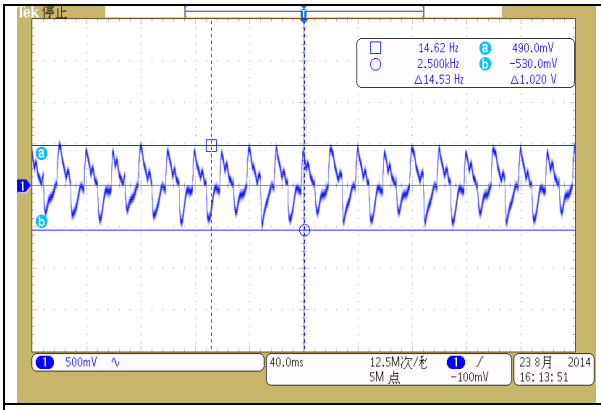


220VAC No-Load turn-on waveform

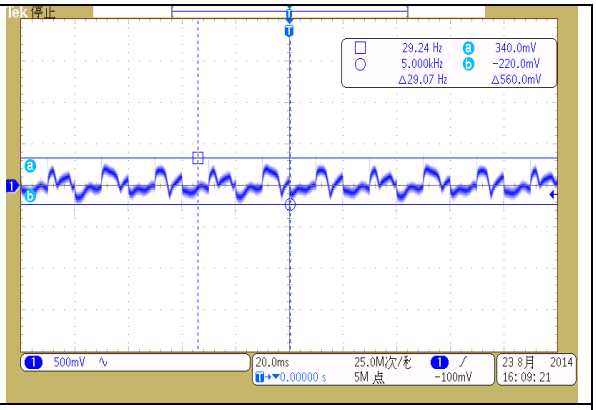


220VAC Full-Load turn-on waveform

2.5 Transient Performance

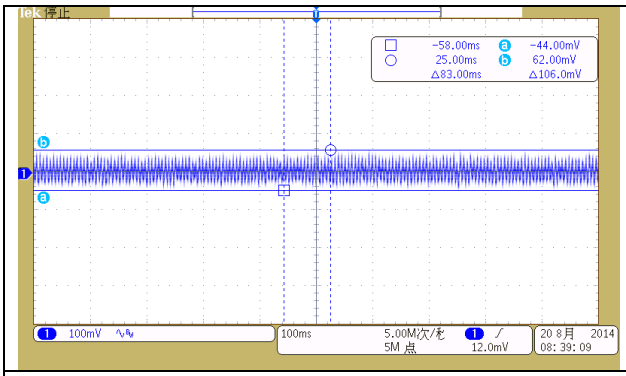


Ch1: 24Voutut 20%-80%Load; Ch2:12/2A

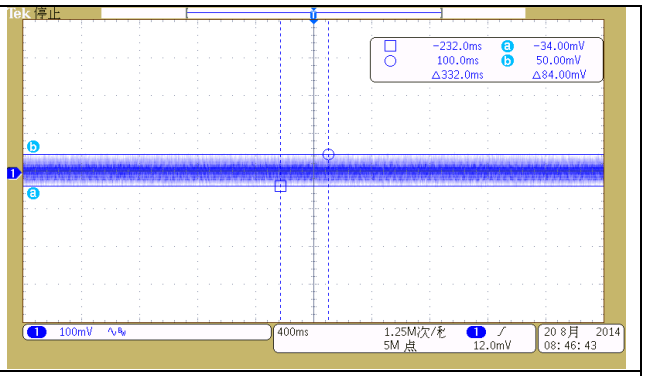


Ch1: 12Voutut 20%-80%Load; Ch2:24/1.7A

2.6 OUTPUT Voltage Ripple

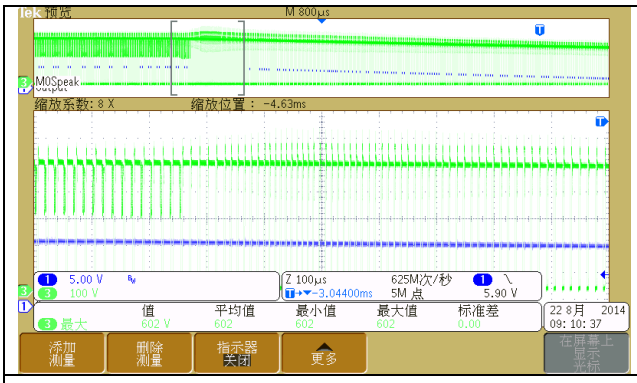


220VAC, 24V/1.7A

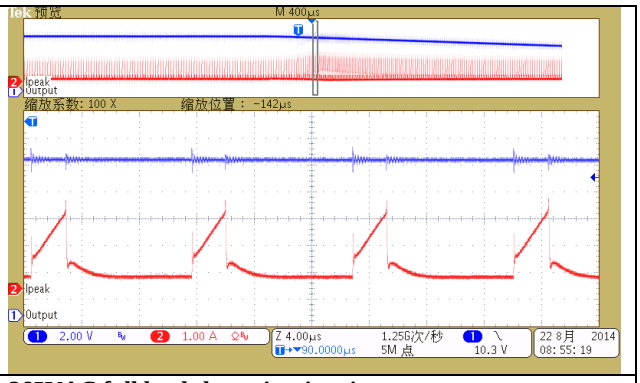


220VAC 12V/2A

2.7 Short Circuit Protection

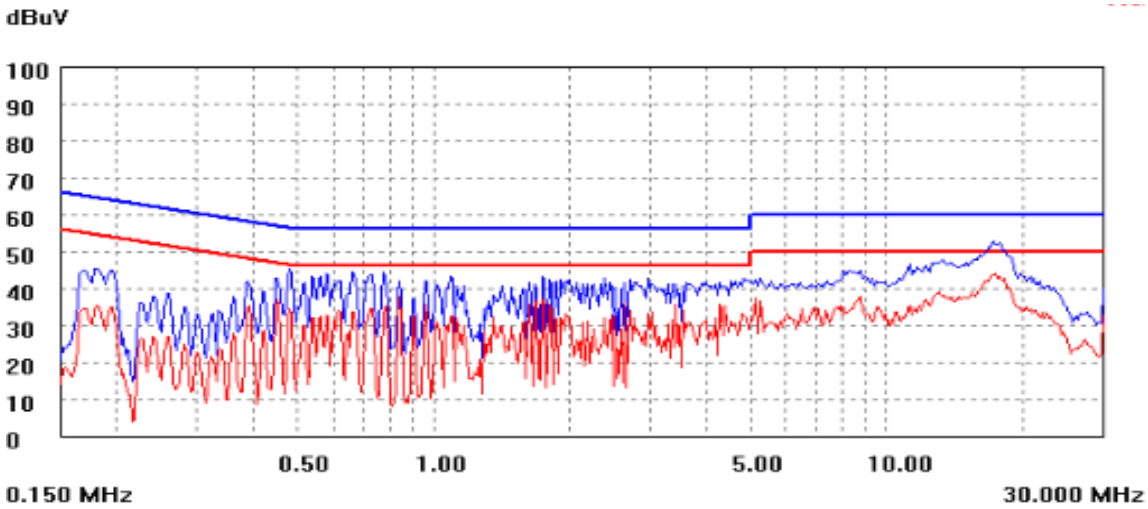


265VAC full load short circuit MOS VDS=602V



265VAC full load short circuit primary current no saturation

2.8 EMI



IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (https:www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2021, Texas Instruments Incorporated