120W Adaptor

Demo Board Manual

(OB2203 + OB6563)

Key Features

- PFC is shut down when system goes to standby
- Standby power less than 0.29W under 240VAC no load
- High efficiency more than 87.7% under normal line with full load
- OCP with line compensation
- Programmable soft start
- Precise OVP
- Low components count
- Meet EN55022 EMI
- Pass 4kV surge test
- Pass 15kV/8kV ESD test

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Tables

1 Adaptor Module Specification

Model number: OBPD120W-H240A Rev.: 01

1.1 Input Characteristics

- AC input voltage rating: 100Vac ~ 240Vac
- AC input voltage range: 90Vac ~ 264Vac
- AC input frequency range: 47Hz ~ 63Hz
- Inrush current at 25°C: 25A maximum at 115VAC
  50A maximum at 230VAC
- Input current: 1.56 Arms max.

1.2 Output Characteristics

- Output Voltage: 19.0V
- Output Tolerance: ±5%
- Min. load current: 0A
- Max. load current: 6.3A

1.3 Performance Specifications

- Max. Output Power: 120W
- Standby Power: <0.5W @ 240V/50Hz, no load
- Efficiency: >85% @ normal line, full load, including power loss in input filters
- Line Regulation: <1%
- Load Regulation: <5%
- Ripple (Po: 10 to 90%): <350 mVpp
- Noise (F<640KHz): <200mVpp
- Hold up Time: 16.7m Sec. Min. @100Vac with full load
- Turn on Delay Time: 2 Sec. Max. @100Vac with full load

1.4 Soft Start

- Settling time: <15ms to within 1% at nominal load
- Overshoot: <3%

1.5 Protection Features

■ Short circuit Protection	Output shut down with automatic recovery
■ Over Voltage Protection	<25V
■ Over Current Protection	Output shut down with automatic recovery. The protection function will be enabled if output current exceeds 110%~140% of rated output current.

1.6 Environments

■ Operating Temperature	0℃ to +40℃
■ Operating Humidity	20% to 90% R.H.
■ Storage Temperature	-40℃ to +60℃
■ Storage Humidity	0% to 95% R.H.

1.7 Dielectric withstand

The power supply shall withstand for 1 minute without breakdown by the application of a 60Hz 1500V AC voltage applied between both input line and ground (10mA DC cut-off current). Main transformer shall similarly withstand 3000Vac applied between both primary and secondary windings for a minimum of one minute.

1.8 Insulation

The insulation resistance should be not less than 30 MOHM after applying of 500VDC for 1 minute

1.9 Leakage current

The AC leakage current is less than 3.5mA when the power supply connects to 264V/50Hz AC input voltage.

1.10 Printed circuit board

■ Technology	Single sided FR2
■ Dimensions	134mm(L), 88mm(W) and 40mm(H)

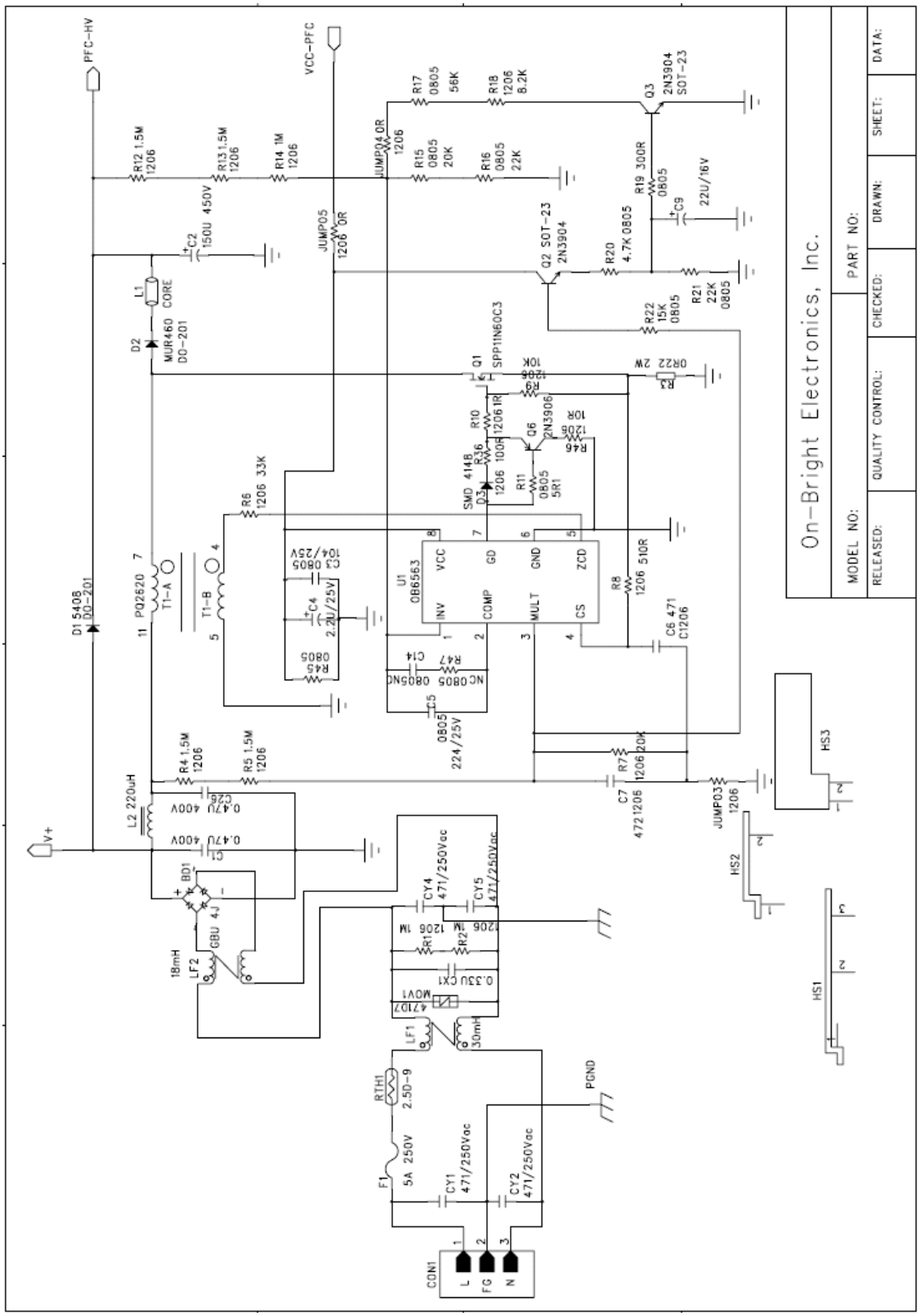
1.11 EMI

Meet international standards

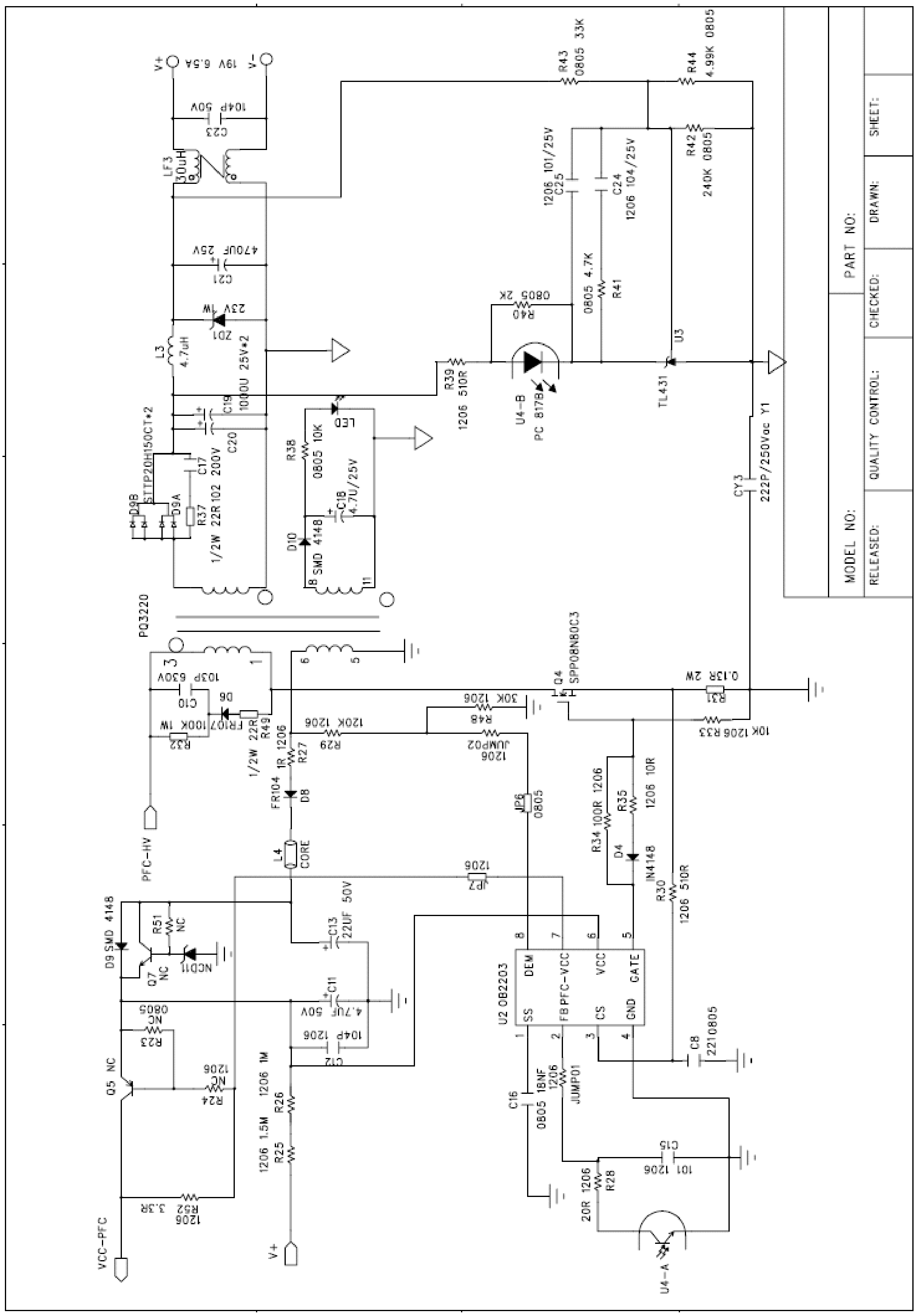
2 Adaptor Module Information

2.1 Schematic

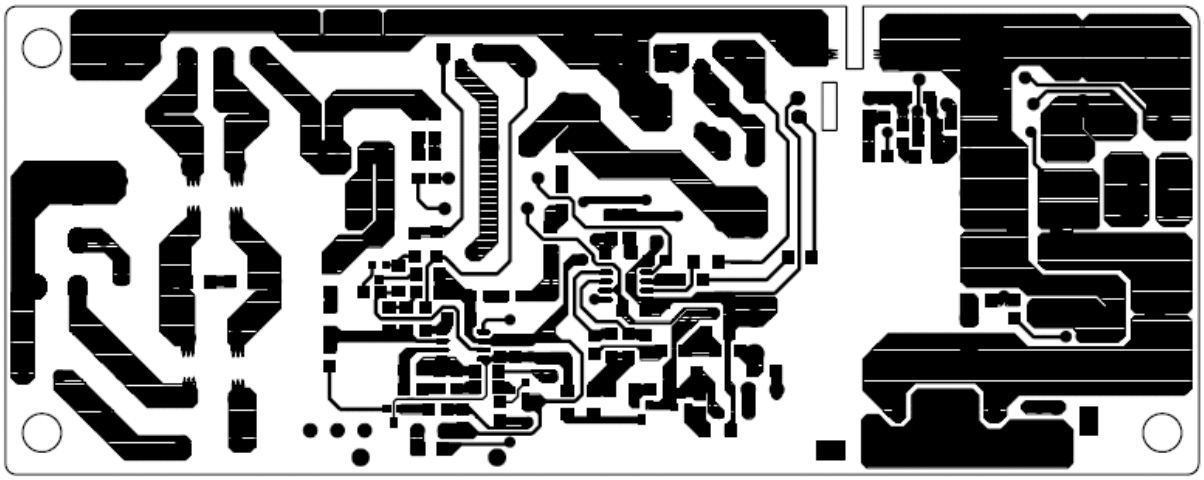
PFC Part:

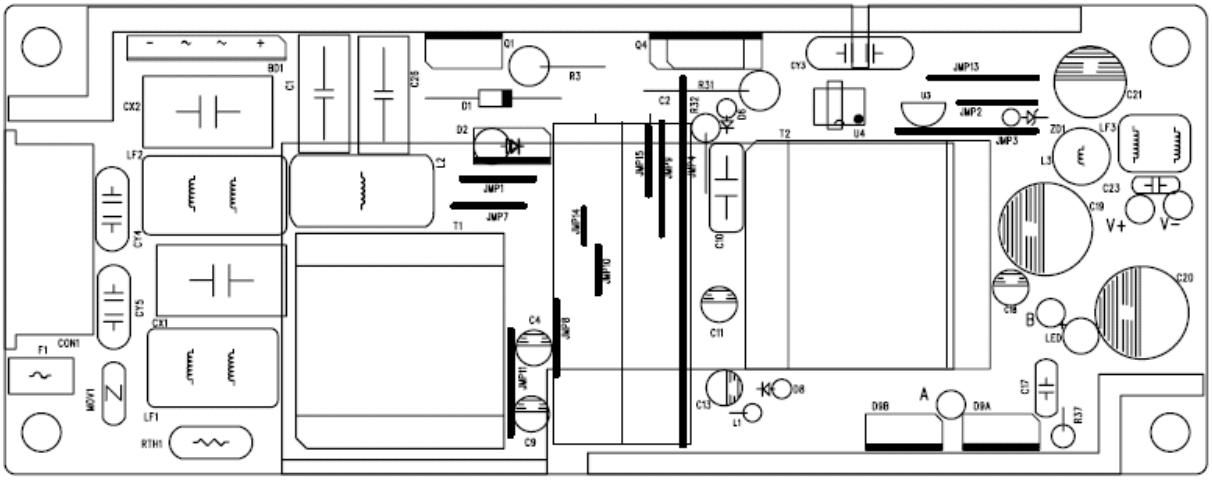


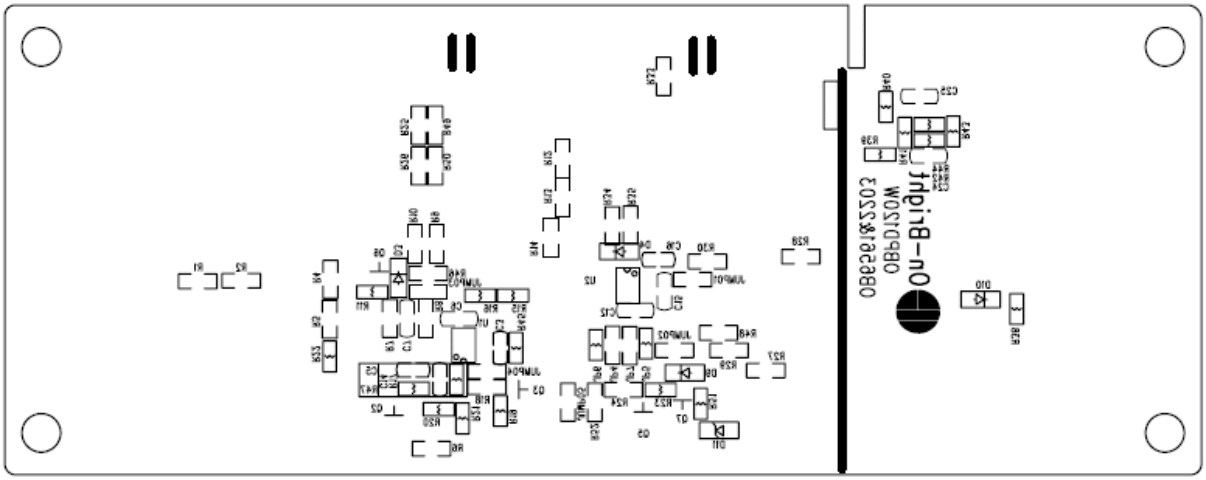
PWM Part:


V+
19V 6.5A
V-
C23
104P 50V
LF3
30uH
C21
470UF 25V
ZD1
23V 1W
L3
4.7uH
C19
C20
1000U 25V*2
STTP20H150CT*2
D9B
D9A
R37
22R 102 200V
C17
1/2W
PQ3220
R38
0805 10K
LED
D10
SMD 4148
C18
4.7U/25V
R39
1206 510R
U4-B
PC 817B
R40
0805 2K
R41
0805 4.7K
C25
1206 101/25V
C24
1206 104/25V
R43
0805 33K
R44
4.99K 0805
R42
240K 0805
U3
TL431
CY3
222P/250Vac Y1
Q4
SPP08N80C3
R31
0.13R 2W
R33
10K 1206
C10
103P 630V
R32
100K 1W
D6
FR107
R49
22R
1/2W
R27
1R 1206
R29
120K 1206
R48
30K 1206
JUMP02
1206
D8
FR104
L4
CORE
PFC-HV
JP6
0805
JP2
1206
R34 100R 1206
R35
1206 10R
D4
IN4148
R30
1206 510R
U2 OB2203
DEM
PFC-VCC
VCC
GATE
SS
FB
CS
GND
C8
221 0805
C16
0805 18NF
JUMP01
1206
C15
101 1206
R28
20R 1206
U4-A
C13
22UF 50V
C11
4.7UF 50V
C12
104P 1206
R26
1206 1M
R25
1206 1.5M
R51
NC
Q7
NC
NCD11
D9 SMD 4148
R23
NC
0805
Q5 NC
R24
NC
1206
R52
3.3R
1206
VCC-PFC
MODEL NO:
PART NO:
RELEASED:
QUALITY CONTROL:
CHECKED:
DRAWN:
SHEET:

2.2 PCB Gerber File







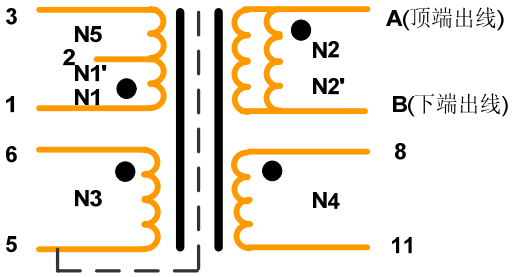
2.3 Bill of material

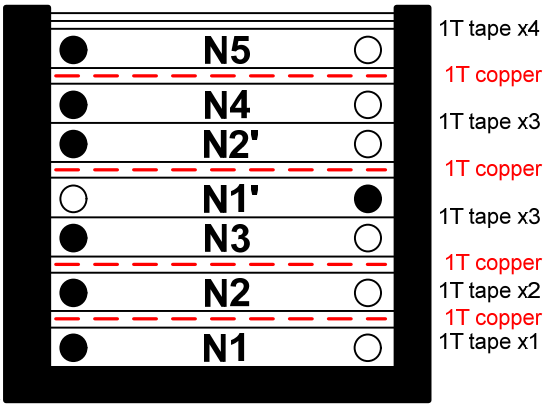
Position	Description	QTY
BD1	Diode, bridge recovery, GBU4J, 4A/ 600V	1
C1.C26	Capacitor, metal poly, 0.47U/400V, -40/85℃, ±20%	2
C2	Capacitor, aluminum electrolytic, 150uF/450V, -40/85℃, ±20%, Φ18*45mm	1
C3	Capacitor, ceramic,100nF/25V, X7R, ±10%, SMD0805	1
C4.	Capacitor, aluminum electrolytic, 2.2uF/25V, -40/85℃, ±20%	1
C5	Capacitor, ceramic,220nF/25V, X7R, ±10%, SMD0805	1
C6	Capacitor, ceramic,470PF/25V, X7R, ±10%, SMD1206	1
C7	Capacitor, ceramic,4.7nF/25V, X7R, ±10%, SMD1206	1
C8	Capacitor, ceramic,220PF/25V, X7R, ±10%, SMD0805	
C9.C13	Capacitor, aluminum electrolytic, 22uF/50V, -40/85℃, ±20%	2
C10	Capacitor, metal poly, 10nF/630V, -40/85℃, ±20%	1
C11.C18	Capacitor, aluminum electrolytic, 4.7uF/50V, -40/85℃, ±20%	2
C12.C24	Capacitor, ceramic,100nF/25V, X7R, ±10%, SMD1206	2
C15.C25	Capacitor, ceramic,100PF/25V, X7R, ±10%, SMD1206	2
C16	Capacitor, ceramic,18nF/25V, X7R, ±10%, SMD0805	1
C17	Capacitor, film,1nF/50V, -40/85℃, ±10%,	1
C19.C20	Capacitor, aluminum electrolytic, 1000uF/25V, -40/85℃, ±20%,Φ12.5*20mm	2
C21	Capacitor, aluminum electrolytic, 470uF/25V, -40/85℃, ±20%,Φ10*16mm	1
C23	Capacitor, film,100nF/50V, -40/85℃, ±10%,	1
CON1	Connect,AC SOCKET,2.5A/250Vac,3PIN	1
CX1	Capacitor,X2, 0.33uF/275VAC, -40/85℃, ±20%	1
CY1.CY2. CY4.CY5	Capacitor,Y2,disc,470PF/250VAC, -40/85℃, ±20%	4
CY3	Capacitor,Y2,disc,2.2nF/250VAC, -40/85℃, ±20%	1
D1	Diode,recovery, 1N5408,3A/1000V,DO-201	1
D2	Diode,ultra fast recovery,MUR460, 4A/600V, DO-201	1
D3.D4.D9.D10	Diode ,fast recovery, 1N4148, 0.1A /100V,SMD1206H	4
D6	Diode ,fast recovery, FR107, 1A/1000V,DO-401	1
D8	Diode ,fast recovery, FR104, 1A/600V,DO-401	1
D9A.D9B	Diode,dual schottky, STPS20H100CT, 2*10A/100V,TO220	2
F1	Fuse, 5A/250V, Φ4*10mm	1
JP6	Resistor,chip, 0R ,1/4W,±5%,SMD0805	1
JP7	Resistor,chip, 0R ,1/2W,±5%,SMD1206	1
JUMP01.02.03.04.05	Resistor,chip, 0R ,1/2W,±5%,SMD1206	4
L1	Core,for D2,1.5*3.5*8mm	
L2	Inductor, choke,220uH min, core9*18*6.5mm	1
L3	Inductor,power choke,4.7uH,±10%,core, Φ5*20mm	1
L4	Core,for D8,1.5*3.5*8mm	
LED	LED, Φ5mm	1
LF1	Inductor, choke,dual winding,13mH min, core8.5*14*7mm	1
LF2	Inductor, choke,dual winding,18mH min, core13.5*22*8.5mm	1
LF3	Inductor, choke,dual winding,30uH,±10%, core5*9.5*5mm	1

MOV1	Varistor ,disk, 7D471,300Vac rms max,385Vdc rms max, 600Amax,Φ7mm	1
Q1	MOSFET,cool MOS power N-channel, SPP11N60C3, 11A/650V,0.38R,TO220	1
Q2.Q3	Transistor, NPN,2N3904,0.2A/40V,SMD,SOT23	2
Q4	MOSFET, N-channel, SPP8N80C3, 8A/800V, 0.65R,TO220	1
Q6	Transistor, PNP,2N3906,0.2A/40V,SMD,SOT23	1
R1.R2.R14.R26	Resistor,chip, 1M ,1/2W,±5%,SMD1206	4
R3	Resistor,metal film,axial,RN55,0R22, 2W, ±5%	1
R4.R5.R12.R13.R25	Resistor,chip, 1.5M ,1/2W,±5%,SMD1206	5
R6	Resistor,chip, 33K ,1/2W,±5%,SMD1206	1
R7	Resistor,chip, 20K ,1/2W,±5%,SMD1206	1
R8.R30.R39	Resistor,chip, 510R ,1/2W,±5%,SMD1206	3
R9.R33	Resistor,chip, 10K ,1/2W,±5%,SMD1206	2
R10.R27	Resistor,chip, 1R ,1/2W,±5%,SMD1206	2
R11	Resistor,chip, 5R1 ,1/4W,±5%,SMD0805	1
R15.R22	Resistor,chip, 20K ,1/4W,±5%,SMD0805	2
R16	Resistor,chip, 22K,1/4W,±5%,SMD0805	1
R17	Resistor,chip, 56K,1/4W,±5%,SMD0805	1
R18	Resistor,chip, 8.2K,1/4W,±5%,SMD0805	1
R19	Resistor,chip, 300R,1/4W,±5%,SMD0805	1
R20.R41	Resistor,chip, 4.7K,1/4W,±5%,SMD0805	2
R21	Resistor,chip, 15K,1/4W,±5%,SMD0805	1
R28	Resistor,chip, 22R,1/2W,±5%,SMD1206	1
R29	Resistor,chip, 120K,1/2W,±5%,SMD1206	1
R31	Resistor,metal film,axial,RN55,0R13, 2W, ±5%	1
R32	Resistor,metal film,axial, 100K, 1W, ±5%	1
R34.R36	Resistor,chip, 47R,1/2W,±5%,SMD1206	2
R35.R46	Resistor,chip,10R,1/2W,±5%,SMD1206	2
R37.R49	Resistor,metal film,axial,22R, 1W, ±5%	2
R38	Resistor,chip, 10K,1/4W,±5%,SMD0805	1
R40	Resistor,chip, 2K,1/4W,±5%,SMD0805	1
R42	Resistor,chip, 240K,1/4W,±1%,SMD0805	1
R43	Resistor,chip, 33K,1/4W,±1%,SMD0805	1
R44	Resistor,chip, 4.99K,1/4W,±1%,SMD0805	1
R52	Resistor,chip, 3.3R,1/2W,±5%,SMD1206	1
R48	Resistor,chip, 30K,1/2W,±5%,SMD1206	1
RTH1	NTC thermistor,disk, 2.5R-9,2.5R,8Arms, Φ9mm	1
T1	Xfmr,boost inductor,400uH,10KHz/1V,PQ2620	1
T2	Transformer, 300uH,10KHz/1V,PQ3220	1
U1	IC, PFC controller,OB6563,SO-8	1
U2	IC,QR controller, OB2203, SO-8	1
U3	IC,Precision Adjustable Shunt Regulator ,TL431, TO-92	1
U4	IC,Photocoupler ,PC817B, DIP4	1
ZD1	Diode,zener, 24V, 1W,DO401	1
PCB	OBPD120W,65*167mm	1

2.4 Transformer Design

2.4.1 Transformer Specification





Bottom

Note:

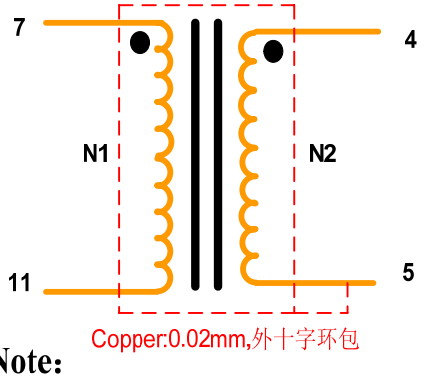
1. Bobbin: PG3220 (12 Pin) ;其中Pin4,9.10 cut off
2. Core 材质: TDK PC 44.
3. L1-3=300u H +/- 5%. (at: 10 K Hz, 0.3 V)
4. HI-POT: (60 Hz/5 m A/2 SET)
   Pri to Sec 3750 Vac; Pri to core 1800Vac

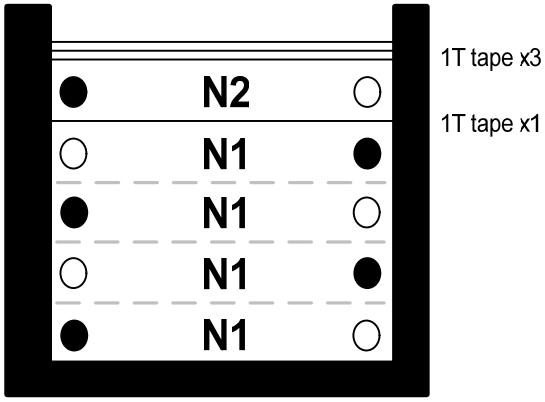
2.4.2 Transformer Winding data

c	Winging	Material	Start	Turns	Finish
1	N1	Φ0.45*2 2UEW	1	9	不断线 →
2	TAPE	TAPE W=10mm (Y)		1.3	
3	Copper	Copper W=9mm P=0.02mm		1.1	5
4	TAPE	TAPE W=10mm (Y)		1.3	
5	N2	Φ0.60*2 三层绝缘线	A	5	B
6	TAPE	TAPE W=10mm (Y)		1.3	
7	Copper	Copper W=9mm P=0.02mm		1.1	5
8	TAPE	TAPE W=10mm (Y)		1.3	
9	N3	Φ0.12*3 2UEW 间绕	6	4	5
10	TAPE	TAPE W=10mm (Y)		1.3	
11	N1’	Φ0.45*2 2UEW	→ 不断线	9	2
12	TAPE	TAPE W=10mm (Y)		1.3	
13	Copper	Copper W=9mm P=0.02mm		1.1	5
14	TAPE	TAPE W=10mm (Y)		1.3	
15	N2’	Φ0.60*2 三层绝缘线	A	5	B
16	N4	Φ0.20*1 三层绝缘线 间绕到 N2	8	2	11
17	TAPE	TAPE W=10mm (Y)		1.3	
18	Copper	Copper W=9mm P=0.02mm		1.1	5

19	TAPE	TAPE W=10mm (Y)		1.3	
20	N5	Φ0.45*2 2UEW	2	9	3
21	TAPE	TAPE W=10mm (Y)		3	

2.4.3 Boost inductor Specification





Bottom

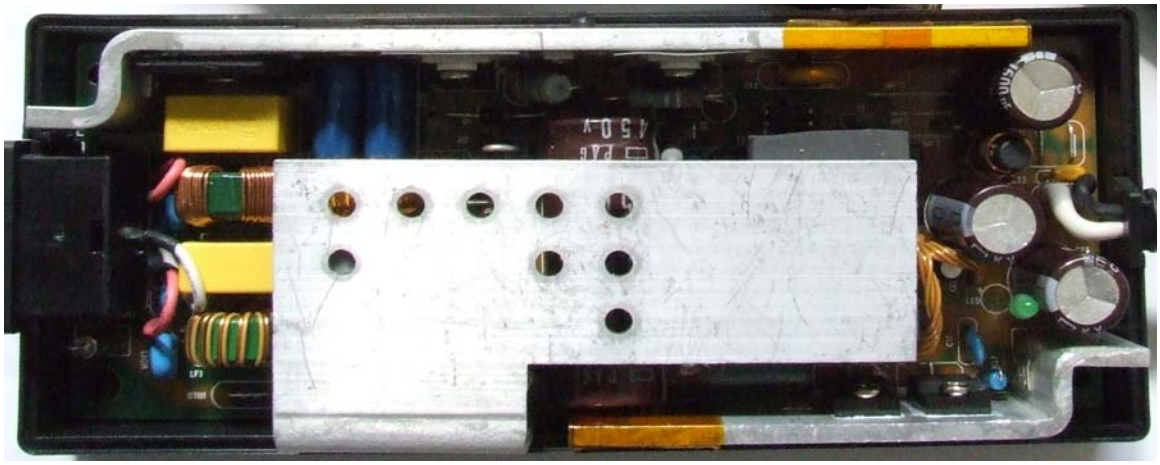
Note:

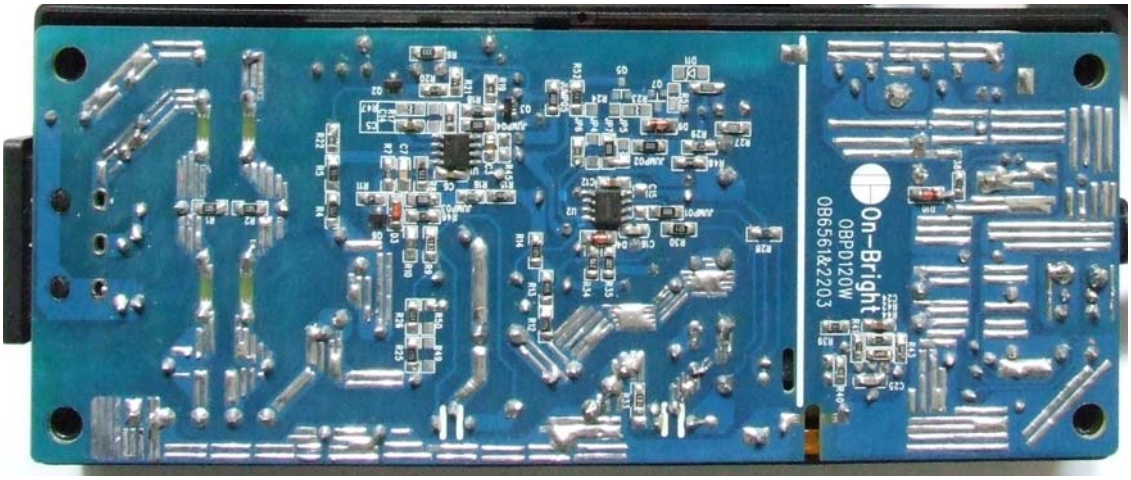
1. Bobbin: PG2620 (12 Pin) ;其中Pin6,8.9.10.12 cut off
2. Core 材质: TDK PC 44.
3. L7-11=400u H +/- 5%. (at: 10 K Hz, 0.3 V)
4. HI-POT: (60 Hz/5 m A/2 SET)
   Pri to Sec 3750 Vac; Pri to core 1500Vac

2.4.4 Boost inductor Winding data

c	Winging	Material	Start	Turns	Finish
1	N1	Φ0.20*10 利兹线	7	52	11
2	TAPE	TAPE W=10mm (Y)		1.3	
3	N2	Φ0.20*1 2UEW	4	7	5
4	TAPE	TAPE W=10mm (Y)		3	

2.5 Adaptor Module Snapshot




On-Bright
OBPD120W
0B6561&2203

3 Performance Evaluation

This session presents the test results of OBPD120W-H240A module up to date. Results on inrush current and safety test are not included and will be added when they become available.
Overall, the module meets design specifications.

Performance Highlights

- The standby power is about 0.29W under 240Vac/50HZ no load.
- The efficiency more than 87.7% under normal line with full load.
- ESD passed 15kV air discharge and 8kV contact discharge test.
- EMI passed EN55022 and FCC15 Class B test with more than 6dB margin

Characterization Results Summary

Test Item	Test result
1. Input characteristics	
Input current (90V/60Hz, full load)	1.56A Max
Standby power at no load with LED (240Vac, With PFC)	0.29W
Efficiency (110Vac, full load for PCB end)	87.7%
2 .Output characteristics	
Line regulation	0.20%
Load regulation	0.26%
Ripple & noise	40mV
Over shoot	2.5% Max
Under shoot	2.1% Max
Dynamic test	308mV
3. Time sequence (90Vac with Full load)	
Turn on delay time	1573mS
Hold up time	89mS
Rise time	26mS
Fall time	15mS
4. Protections	
Over voltage protection	23V
Over current protection (90Vac ~264Vac)	7.3A ~8.1A
Short Circuit protection	OK

Test Equipments

- AC Source: WEST WEW1010
- Digital Power Meter: YOKOGAWA WT210
- Electrical Load: Prodigit 3315C
- Oscilloscope： LeCroy WS424
- Multimeter VICTORY VC9807A

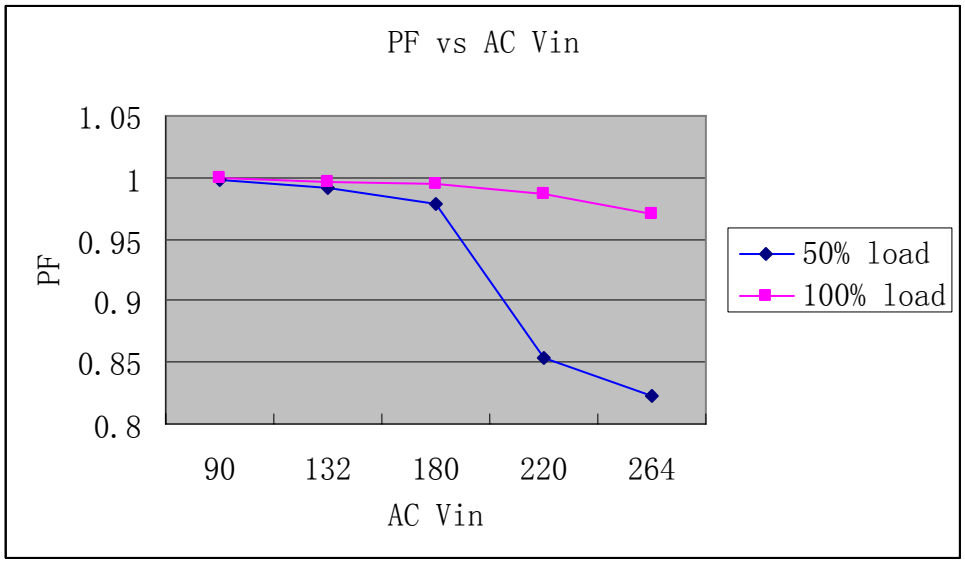
3.1 Input Characteristics

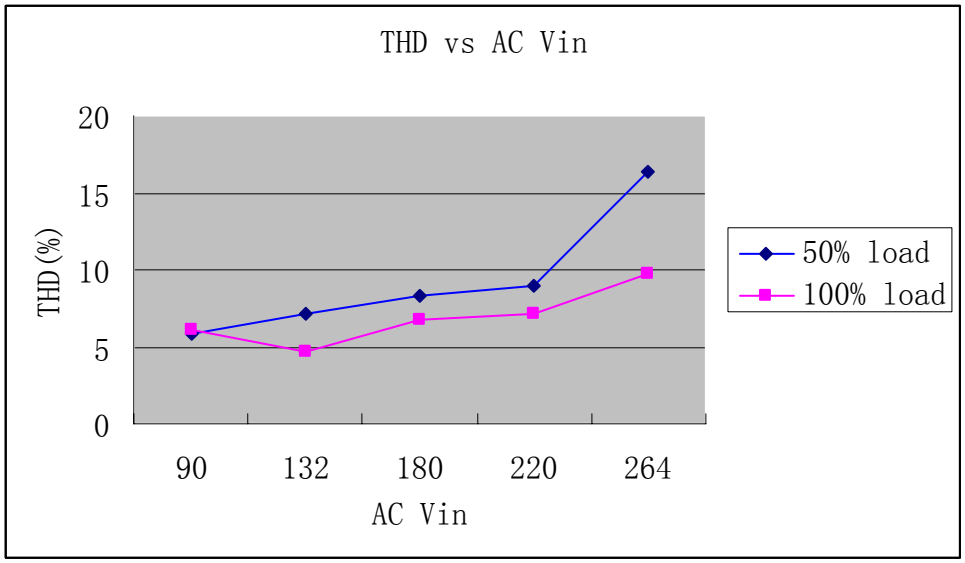
3.1.1 Input Normal Characteristics

100% load					
Test Items	Test data				
Vin(Vac)	90	132	180	220	264
Frequency (Hz)	63	57	53	50	47
Iin(A)	1. 56	1. 07	0. 75	0. 62	0. 54
PF	0.999	0.997	0.994	0.986	0.971
THD (%)	6.1	4.7	6.8	7.2	9.7

50% load					
Test Items	Test data				
Vin(Vac)	90	132	180	220	264
Frequency(Hz)	63	57	53	50	47
Iin (A)	0. 75	0. 52	0. 40	0. 38	0. 30
PF	0.998	0.992	0.978	0.853	0.822
THD(%)	5.9	7.2	8.3	9.0	16.3

Character Curve





3.1. 2 Input current and Standby power

The module was tested at different input voltages (from 90Vac to 264Vac)

Table 1 Input current at full load

Input Voltage	90V/60Hz	110V/60Hz	132V/60Hz	180V/50Hz	220V/50Hz	264V/50Hz
Input Current(A)	1.56	1.25	1.07	0.75	0.62	0.54

Table 2 Standby power at no load with LED (with PFC)

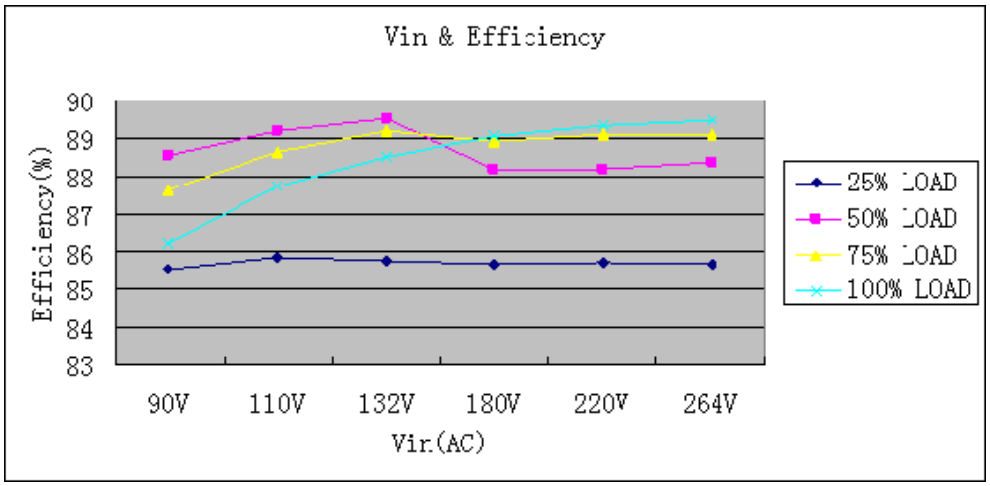
Input Voltage	90V/60Hz	110V/60Hz	132V/60Hz	180V/50Hz	220V/50Hz	264V/50Hz
Pin (W)	0.116	0.127	0.147	0.191	0.256	0.310

3.1. 3 Efficiency

Note: All data was measurement at PCB end.

Table 3 Efficiency with PFC part

Vin	Efficiency (%)				Average Eff (%)
	25% Load	50% Load	75% Load	100% Load	
90V/60Hz	85.54	88.54	87.63	86.23	86.98
110V/60Hz	85.85	89.20	88.63	87.73	87.85
132V/60Hz	85.76	89.51	89.20	88.51	88.24
180V/50Hz	85.67	88.19	88.90	89.03	87.94
220V/50Hz	85.75	88.19	89.11	89.30	88.08
264V/50Hz	85.69	88.36	89.07	89.45	88.14
Average Eff (%)	85.71	88.66	88.75	88.37	



3.2 Output Characteristics

3.2.1 Line Regulation & Load Regulation

Table 4 Line Regulation & Load Regulation

Input Voltage	Output Voltage (V)			Load Regulation (%)
	No Load	Half Load	Full Load	
90V/47Hz	19.20	19.17	19.17	0.15
110V/60Hz	19.20	19.17	19.17	0.15
132V/63Hz	19.20	19.16	19.17	0.2
180V/47Hz	19.20	19.15	19.16	0.26
240V/50Hz	19.20	19.15	19.16	0.26
264V/63Hz	19.20	19.15	19.16	0.26
Line Regulation (%)	0	0.1	0.05	

Note: All data was measured at PCB end.

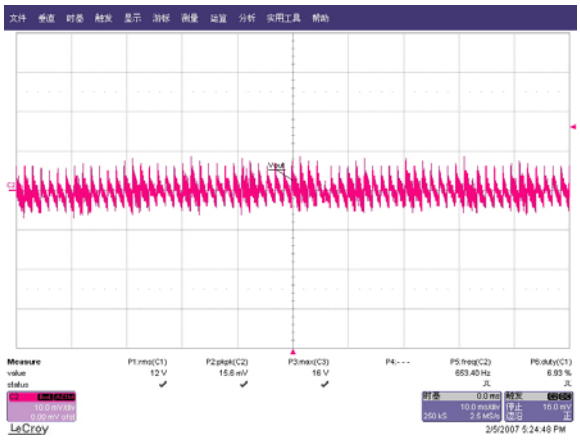
3.2.2 Ripple & Noise

Table 5 Ripple & Noise measure results

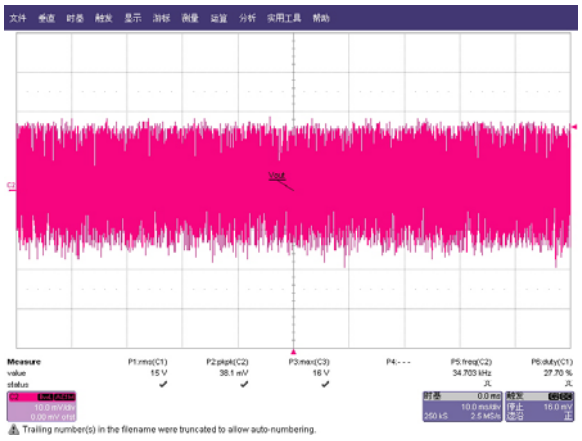
Input Voltage	R&N (mV)		Waveform
	No Load	Full Load	
90Vac/60HZ	15.6mv	38.1mv	
132Vac/60HZ	14.4mv	38.8mv	
180Vac/50HZ	14.4mv	39.4mv	
264Vac/50HZ	16.3mv	39.4mv	

Note: Ripple & noise were measured at DC cord end with a 0.1uF/100V ceramic cap connected in parallel with a 10uF/50V Electrolytic cap. Bandwidth was limited to 20MHZ.

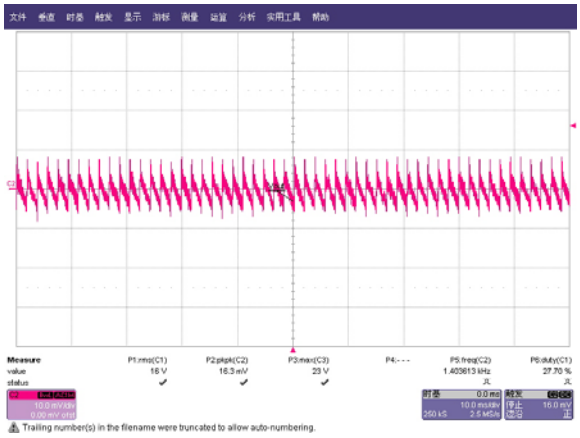
R&N Waveform



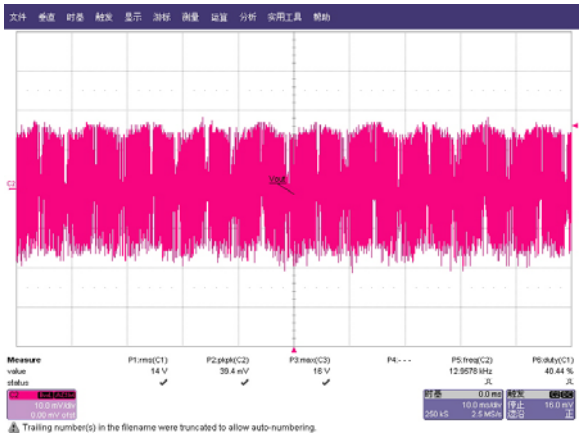
R&N waveform@90Vac input with no load



R&N waveform@90Vac input with full load



R&N waveform@264Vac input with no load



R&N waveform@264Vac input with full load

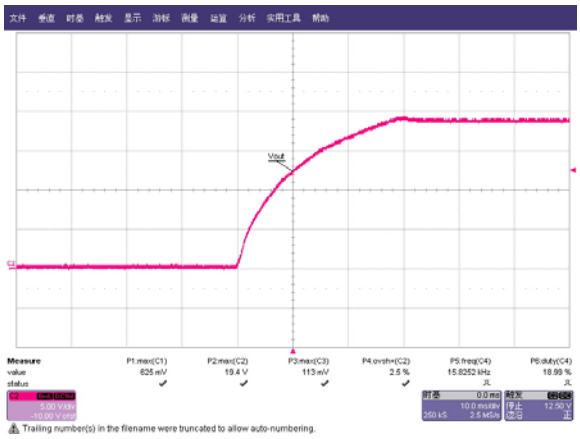
3.2.3 Overshoot & Undershoot

Ac input switches ON for overshoot and OFF for undershoot

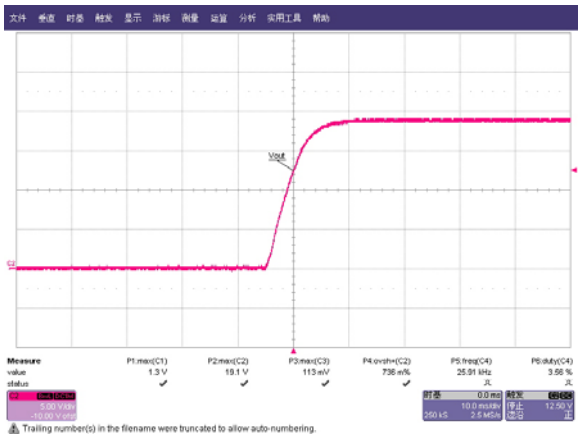
Table 6 Overshoot/undershoot measurement results

Input Voltage	Load	Item	Meas. Data (%)	Waveform
90V/60Hz	Full load	overshoot	2.5	
		undershoot		
	No load	overshoot	0.736	
		undershoot		
264V/50Hz	Full load	overshoot	1.8	
		undershoot	2.1	
	No load	overshoot	1.3	
		undershoot		

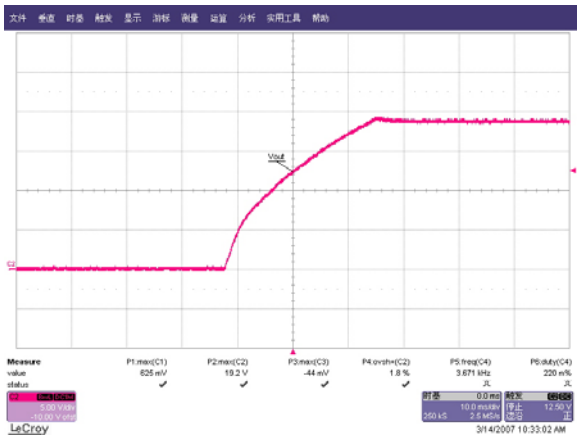
Overshoot and undershoot waveform



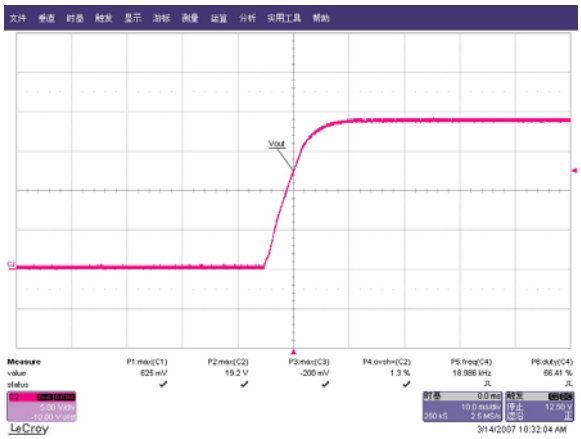
Overshoot waveform@90Vac input with full load



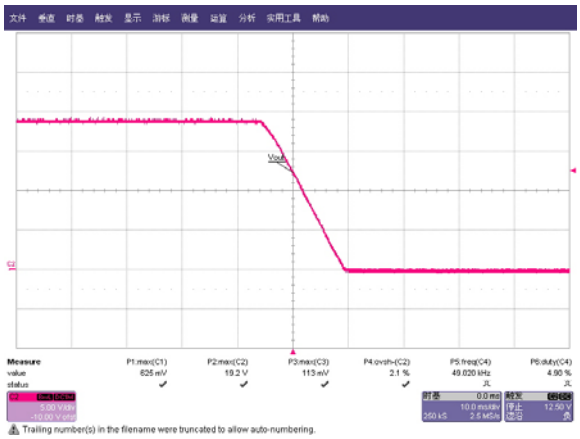
Overshoot waveform @90Vac input with no load



Overshoot waveform @264Vac input with full load



Overshoot waveform @264Vac input with no load



Undershoot waveform @264Vac input with full load

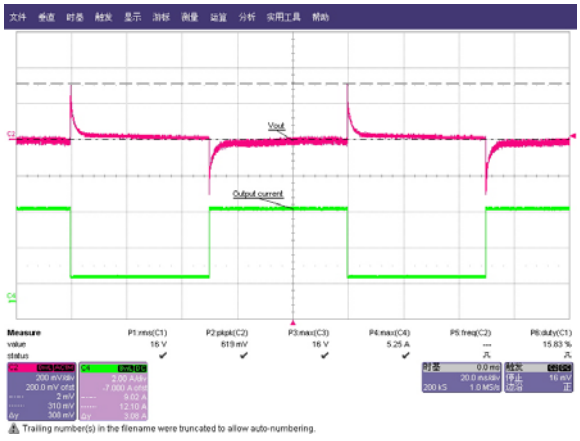
3.2.4 Dynamic Test

A dynamic loading with low set at 1.26 A lasting for 10mS and high set at 5.0A lasting for 50mS is added to output. The ramp is set at 0.125A/uS at transient.
All data was measurement at PCB end.

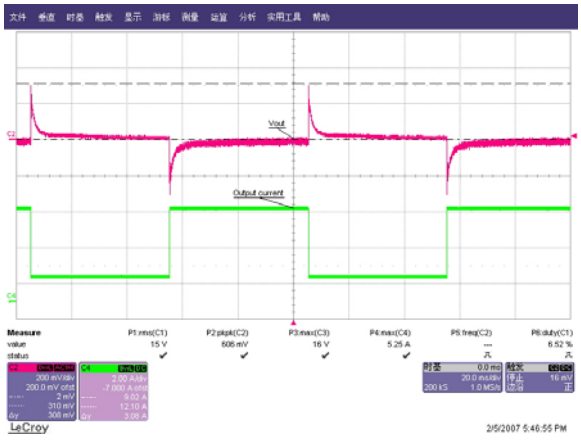
Table 7 Output voltage under dynamic test

Input voltage	Output voltage (mV)	Waveform
90V/60HZ	308	
132V/60HZ	308	
180V/50HZ	306	
264V/50HZ	308	

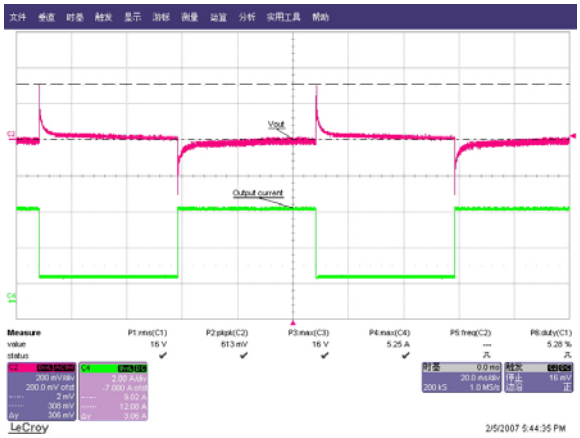
Dynamic waveform



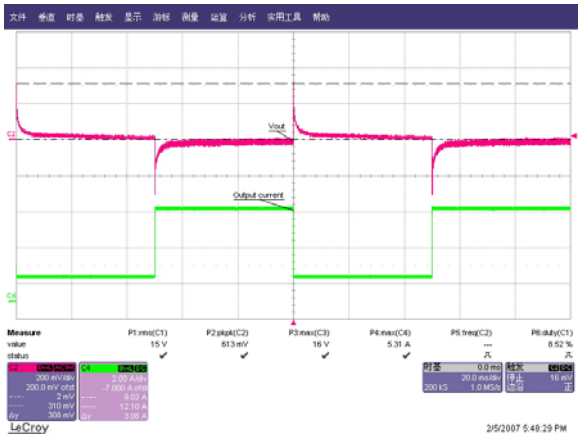
Dynamic waveform @90Vac input



Dynamic waveform @132Vac input



Dynamic waveform @180Vac input



Dynamic waveform @264Vac input

3.2.5 Time Sequence

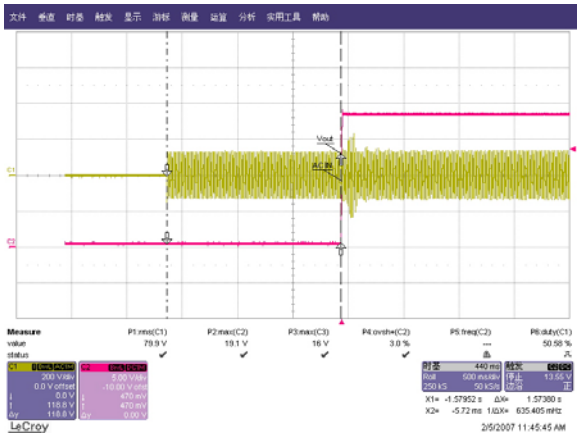
Load condition: Full load

Table 8 Turn-on delay /hold-up/Rise time/Fall time measurement results

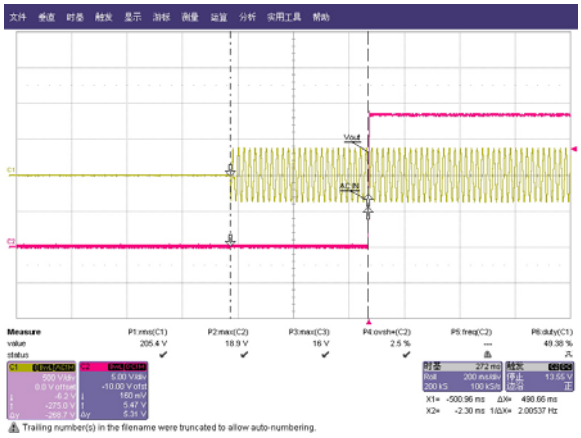
Item	Input voltage	Meas. Data (mS)	Remark
Turn-on delay time	90V/60Hz	1573	
	264V/50Hz	498	
Hold-up time	90V/60Hz	29.5	
	264V/50Hz	89.4	

Rise Time	90V/60Hz	28.4	
	264V/50Hz	26.5	
Fall Time	90V/60Hz	15	
	264V/50Hz	15	

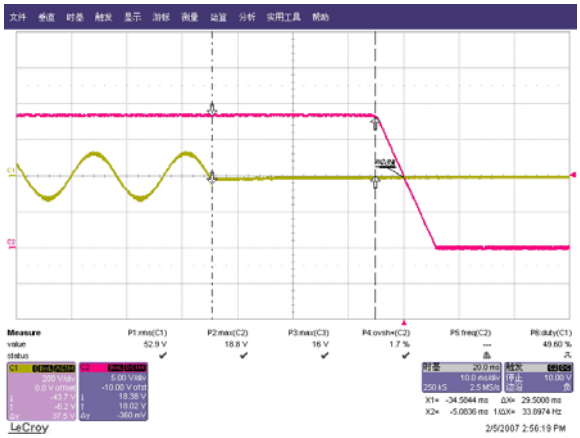
Time sequence waveform



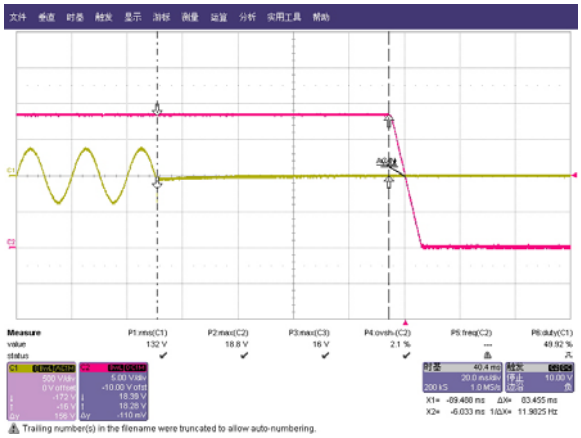
Turn on waveform @90Vac input with full load



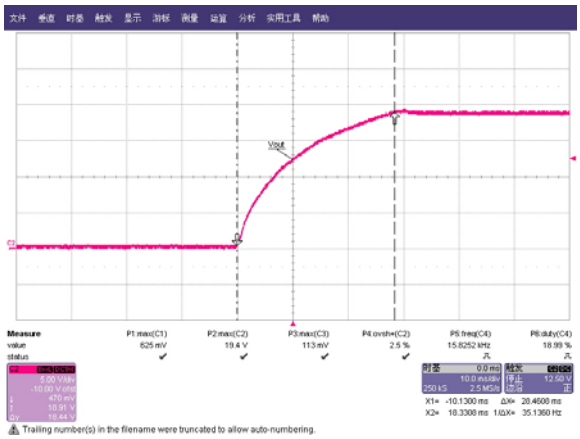
Turn on waveform @264Vac input with full load



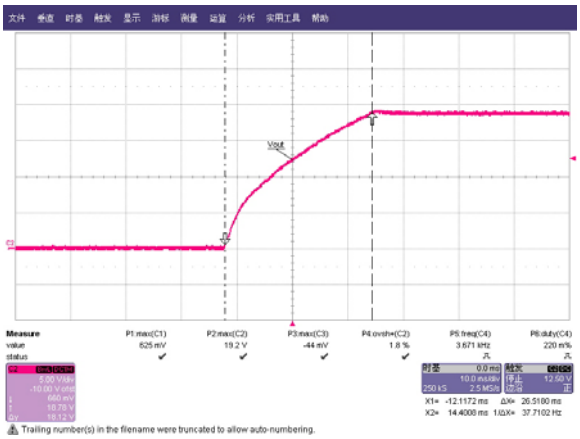
Hold up waveform @90Vac input with full load



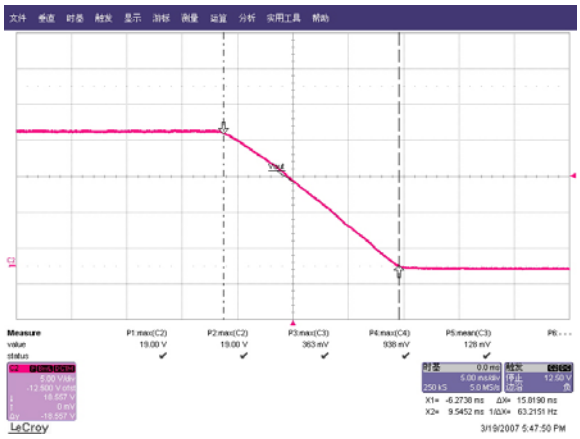
Hold up waveform @264Vac input with full load



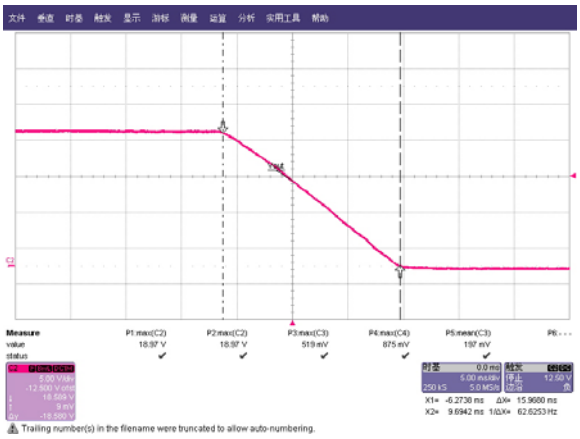
Rise waveform @90Vac input with full load



Rise waveform @264Vac input with full load



Fall waveform @90Vac with full load



Fall waveform @264Vac with full load

3.3 Protections

3.3.1 Over Current Protection (OCP)

The power supply will shut down when output current exceeds 6.9A~8.8A, and it should recover when the over current condition is removed.

Table 9 OCP value vs. input voltage

Input Voltage	90V/60Hz	120V/60Hz	132V/60Hz	180V/50Hz	240V/50Hz	264V/50Hz
OCP (A)	7.32	7.28	7.48	8.11	8.14	8.11

3.3.2 Over Voltage Protection (OVP)

The power supply will shut down and latch when feedback circuit is disabled, and the output voltage can not be over 26.6V. The unit should recover when the protection condition is removed and restart input.

Table 10 OVP test result

Input Voltage	OVP Trigger Voltage (V)	
	No Load	Full Load
90V/60Hz	22.6	22.5
132V/60Hz	22.8	22.7
180V/50Hz	22.6	22.5
264V/50Hz	23.0	22.9

3.3.3 Short Circuit Protection

Short circuit placed on output will shut down the power supply and the unit should automatic recover after the short circuit condition is removed.

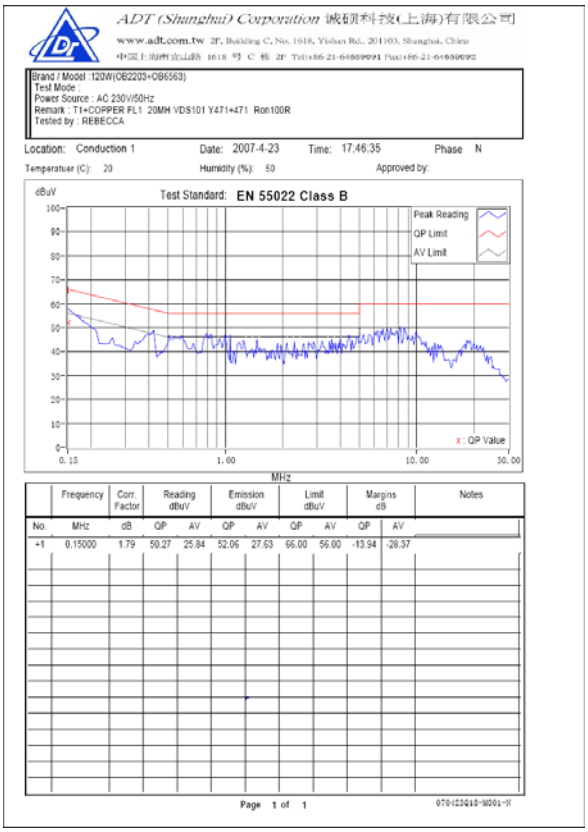
Table 11 SCP test result

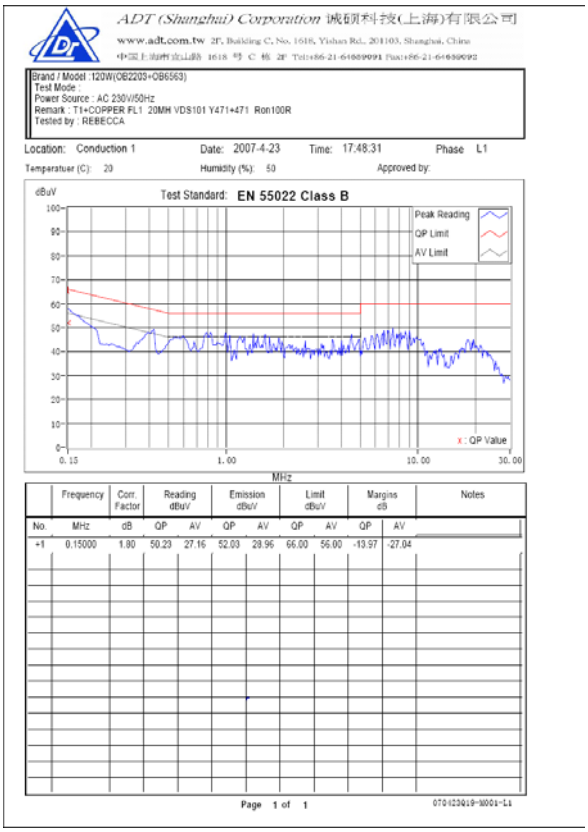
Input voltage	90V/60Hz	264V/50Hz
Test Result	OK	OK
Input Power (W)	0.03	0.28

3.4 EMI Test

3.4.1 Conducted EMI Test

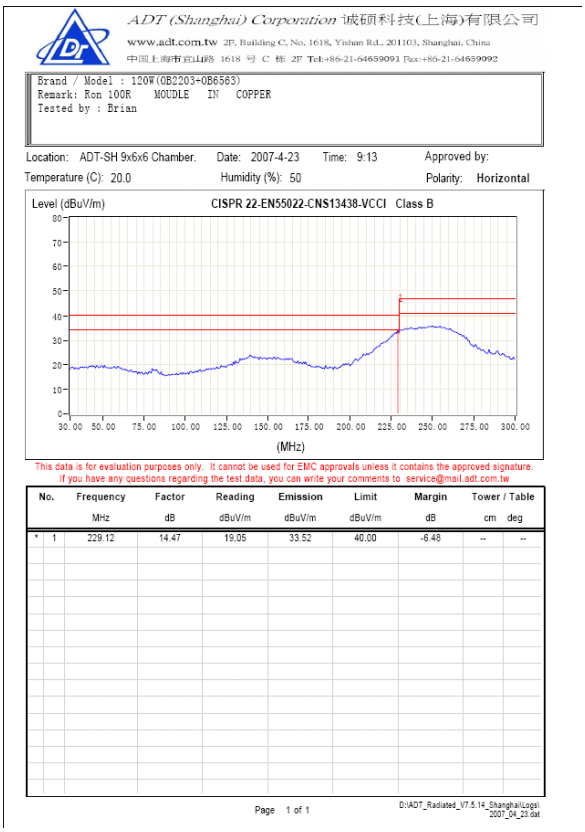
EN55022 CLASS B @ full load report





3.4.2 Radiation EMI Test

EN55022 CLASS B @ full load report



ADT (Shanghai) Corporation 诚硕科技(上海)有限公司
www.adt.com.tw 2F, Building C, No. 1618, Yishan Rd., 201103, Shanghai, China
中国上海市宜山路 1618 号 C 栋 2F Tel:+86-21-64659091 Fax:+86-21-64659092

Brand / Model : 120W(OB2203+OB6563)
Remark: Ron 100R MOUDLE IN COPPER
Tested by : Brian

Location: ADT-SH 9x6x6 Chamber. Date: 2007-4-23 Time: 9:13 Approved by:
Temperature (C): 20.0 Humidity (%): 50 Polarity: Horizontal

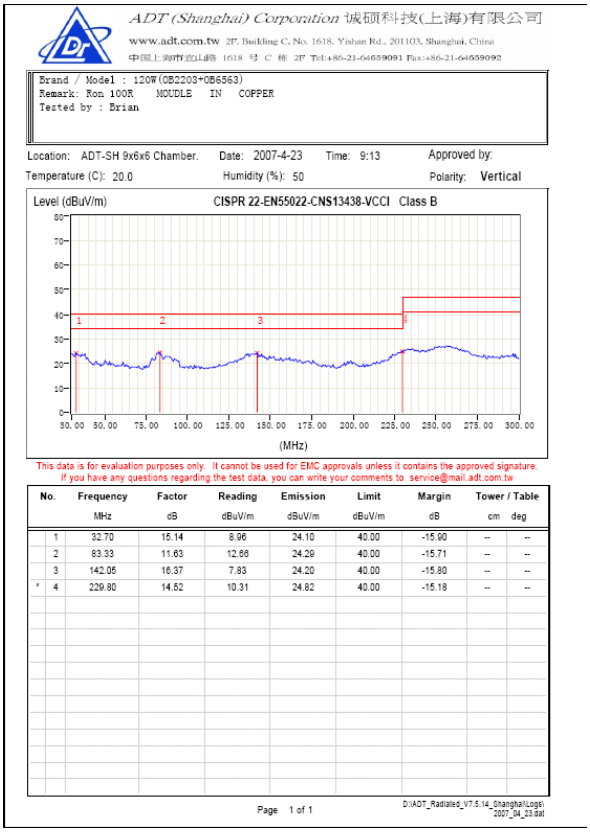
Level (dBuV/m) CISPR 22-EN55022-CNS13438-VCCI Class B

(MHz)

This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.
If you have any questions regarding the test data, you can write your comments to service@mail.adt.com.tw

No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBuV/m	dBuV/m	dBuV/m	dB	cm	deg
*	1	229.12	14.47	19.05	33.52	40.00	-6.48	--	--

Page 1 of 1 D:\ADT_Radiated_V7.5.14_Shanghai\Logs\2007_04_23.dat



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中国上海市宜山路 1618 号 C 栋 2F Tel:+86-21-64659091 Fax:+86-21-64659092

Brand / Model : 120W(OB2203+OB6563)
Remark: Ron 100R MOUDLE IN COPPER
Tested by : Brian

Location: ADT-SH 9x6x6 Chamber. Date: 2007-4-23 Time: 9:13 Approved by:
Temperature (C): 20.0 Humidity (%): 50 Polarity: Vertical

Level (dBuV/m) CISPR 22-EN55022-CNS13438-VCCI Class B

(MHz)

This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.
If you have any questions regarding the test data, you can write your comments to service@mail.adt.com.tw

No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBuV/m	dBuV/m	dBuV/m	dB	cm	deg
	1	32.70	15.14	8.96	24.10	40.00	-15.90	--	--
	2	83.33	11.63	12.66	24.29	40.00	-15.71	--	--
	3	142.05	16.37	7.83	24.20	40.00	-15.80	--	--
*	4	229.80	14.52	10.31	24.82	40.00	-15.18	--	--

Page 1 of 1 D:\ADT_Radiated_V7.5.14_Shanghai\Logs\2007_04_23.dat

3.5 ESD Test

AUDIX® AMC410-8 Electrostatic Discharge Test Data

Project No.:____

Immunity	Electrostatic Discharge	☑ IEC 61000-4-2: 2001 ☐ Others: _____ ☑ PASS / ☐ FAIL

*Applicant: ONBRIGHT

*EUT: POWER SUPPLY

*M/N: OBPD120W OB6561&2203 *S/N:__

Ambient Condition: 19 ℃ 45 %RH

Atmosphere Pressure: 101.3kPa

*Air Discharge: ☐ ± 8kV or ☑ Other: 15KV Repeating Rate: 1s

*Contact Discharge: ☐ ± 4kV or ☑ Other: 10KV Repeating Rate: 1s

*Operation Mode: FULL LOAD *Criterion: A

Location	Points	Kind (A-Air; C-Contact)	Result
Output port	2	C	PASS
Input port	2	A	PASS
Output port	2	A	PASS
／	／	／	／
／	／	／	／
／	／	／	／
／	／	／	／
／	／	／	／
／	／	／	／
／	／	／	／

Test Description:

*Test Equipment	ESD Generator	☑ EM Test Dito (S/N: V0503100054 ☐ KeyTek MZ-15/EC(S/N:_____)	Cal: 2007.4.25 Cal: _____
	Other:__/_____	☐ _____(S/N:_____)	Cal: _____

Note: The Items marked with * shall be filled in prior to formal test.

Test Engineer: kamii Date: 2007.04.12

Page of

3.6 Lighting Test

AMC410-10 Surge Test Data

Project No.:_____

Immunity	Surge	☑ IEC 61000-4-5: 2001 ☑ Others: _____ ☑ PASS / ☐ FAIL

*Applicant: ONBRIGHT
*EUT: POWER SUPPLY
*M/N: OBPD120W-L190A (OB2203) *S/N: ___

Ambient Condition: 23 ℃ 58 %RH
Atmosphere Pressure: 101.3kPa

*Power supply: 230V/50Hz
*Repetition: 5 times per test * Interval: 60 seconds
*Operation Mode: FULL LOAD *Criterion: A
*Line: ☑ AC Mains / ☐DC Supply / ☐Signal Line

*Conductor	*Phase	500V		2kV		4kV		5kV		6kV	
		+	-	+	-	+	-	+	-	+	-
☑ L1 ☑ L2 ☐PE	0°	/	/	PASS	PASS	/	/	/	/	/	/
	90°	/	/	PASS	PASS	/	/	/	/	/	/
	180°	/	/	PASS	PASS	/	/	/	/	/	/
	270°	/	/	PASS	PASS	/	/	/	/	/	/
☑ L1 ☐L2 ☑ PE	0°	/	/	/	/	PASS	PASS	/	/	/	/
	90°	/	/	/	/	PASS	PASS	/	/	/	/
	180°	/	/	/	/	PASS	PASS	/	/	/	/
	270°	/	/	/	/	PASS	PASS	/	/	/	/
☐L1 ☑ L2 ☑ PE	0°	/	/	/	/	PASS	PASS	/	/	/	/
	90°	/	/	/	/	PASS	PASS	/	/	/	/
	180°	/	/	/	/	PASS	PASS	/	/	/	/
	270°	/	/	/	/	PASS	PASS	/	/	/	/
DC Supply		/	/	/	/	/	/	/	/	/	/
Signal Line	L-PE	/	/	/	/	/	/	/	/	/	/
	L-L	/	/	/	/	/	/	/	/	/	/

TEST DESCRIPTION:

*Test Equipment			
	Surge Generator	☐ECAT (S/N:_____)	Cal: _____
		☐CE Master(S/N: _____)	Cal: _____
		☑ EMC Pro(S/N: 0002256)	Cal: 2006.04.18
	Other: _____	☐ _____ (S/N: _____)	Cal: _____

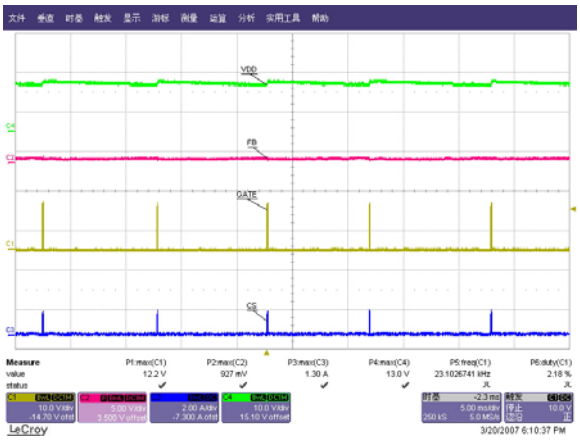
Note: The Items marked with * shall be filled in prior to formal test.

Test Engineer: KAMII Date: 2007.04.12

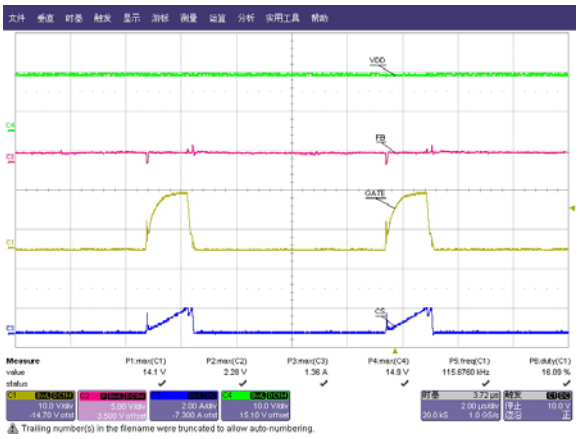
Page of

4 Other important waveform

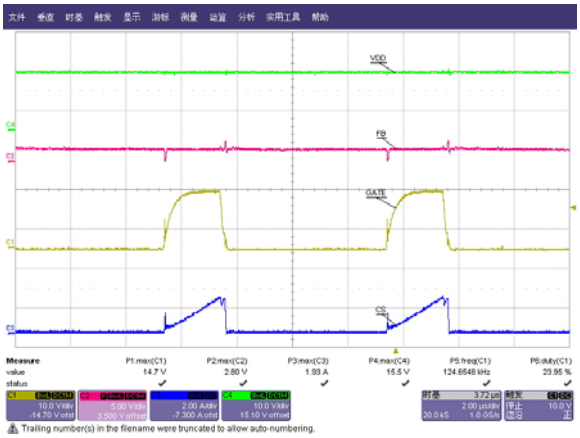
4.1 Vdd, FB, Sense& Gate wave form at no load/25% load/50% load/full load.



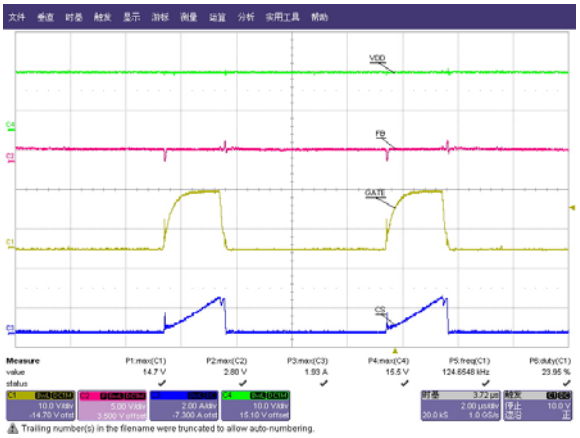
Vdd,FB,Sense&Gate wave form@90Vac; no load



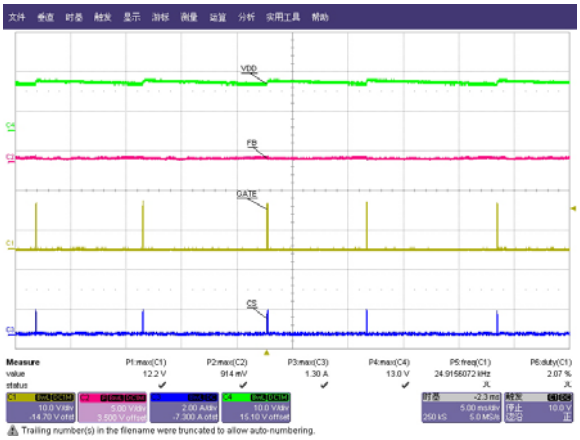
Vdd,FB,Sense&Gate wave form@90Vac; 25% load



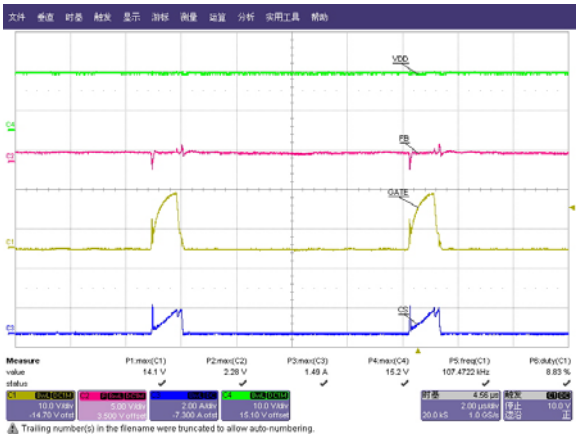
Vdd,FB,Sense&Gate wave form@90Vac; 50% load



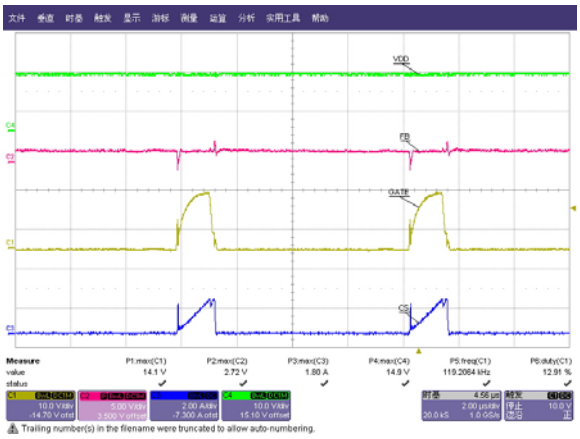
Vdd,FB,Sense&Gate wave form@90Vac; full load



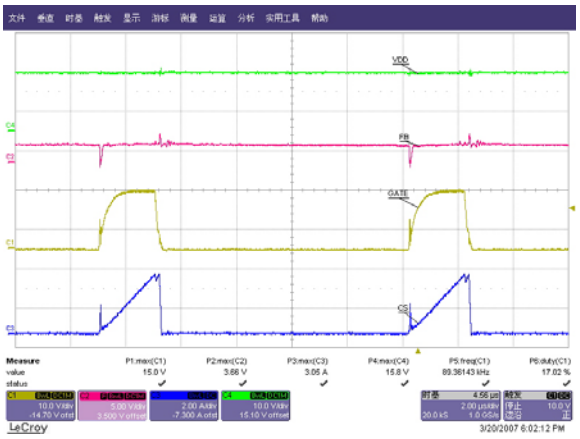
Vdd,FB,Sense&Gate wave form@264Vac; no load



Vdd,FB,Sense&Gate wave form@264Vac; 25% load



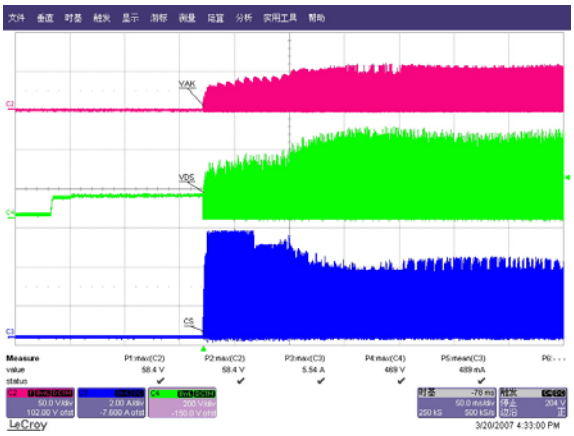
Vdd,FB,Sense&Gate wave form@264Vac; 50% load



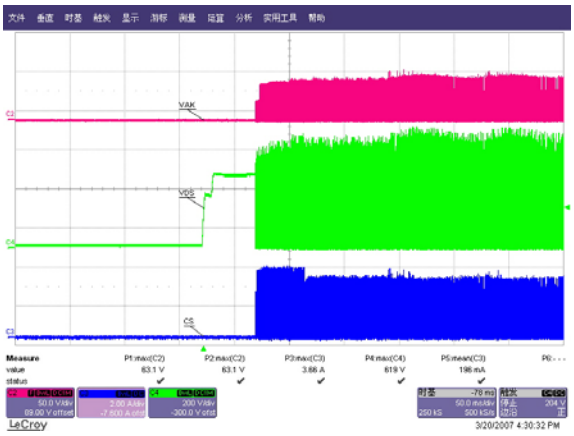
Vdd,FB,Sense&Gate wave form@264Vac; full load

4.2 MOSFET VDS wave, CS wave and Output diode VAK waveform at full load, start/normal/output short

4.2.1 VDS ,CS & VAK start waveform

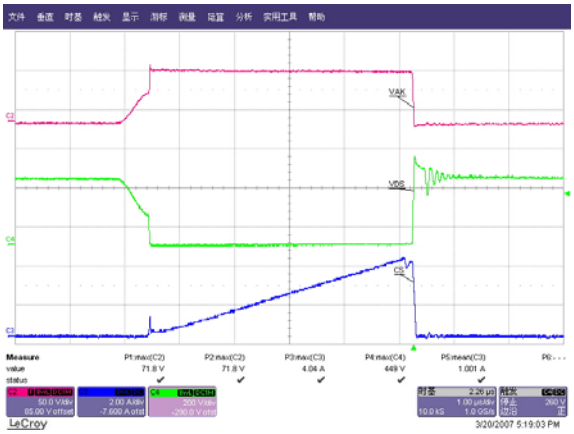


VDS ,CS & VAK start waveform@90Vac; full load

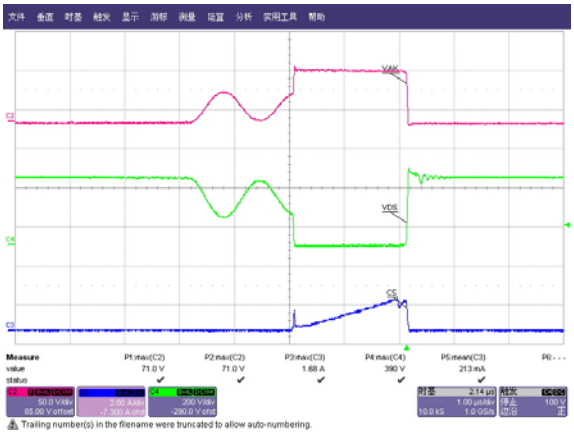


VDS ,CS & VAK start waveform@264Vac; full load

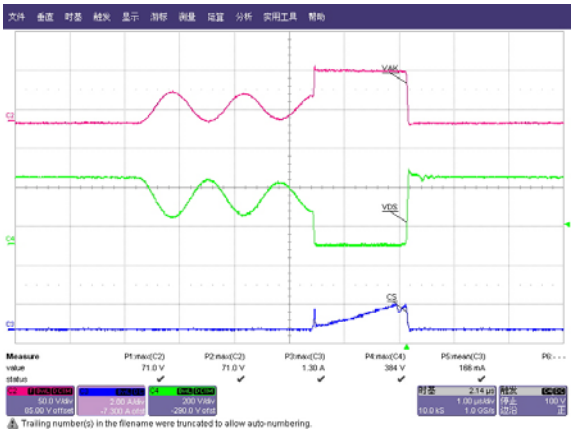
4.2.2 VDS ,CS & VAK normal waveform



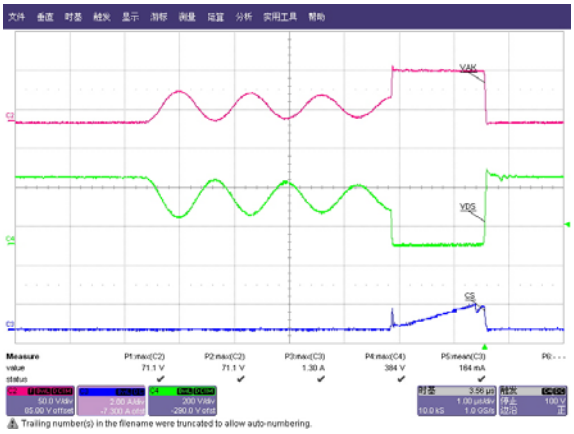
VDS ,CS & VAK normal waveform@90Vac; full load



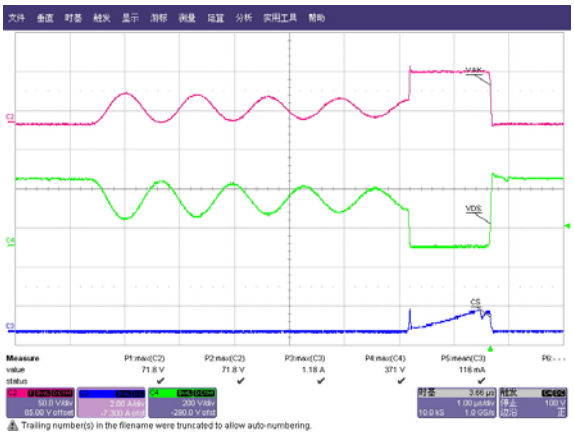
VDS ,CS & VAK normal waveform@90Vac; 2.4A load



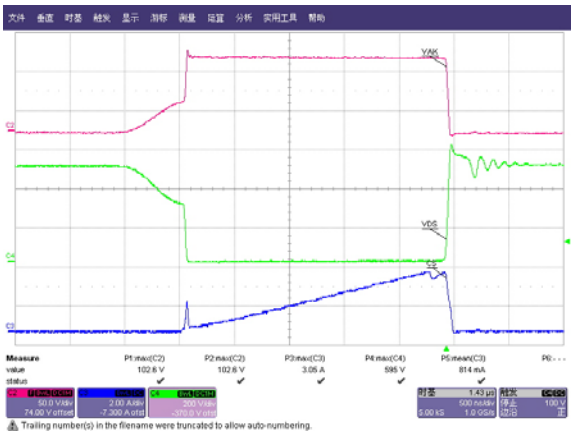
VDS ,CS & VAK normal waveform@90Vac; 1.65A load



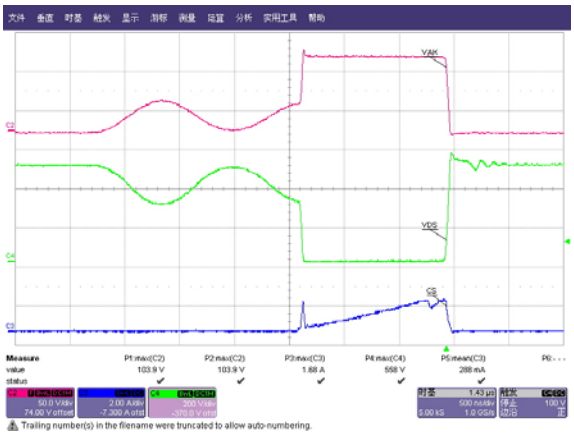
VDS ,CS & VAK normal waveform@90Vac; 1.45A load



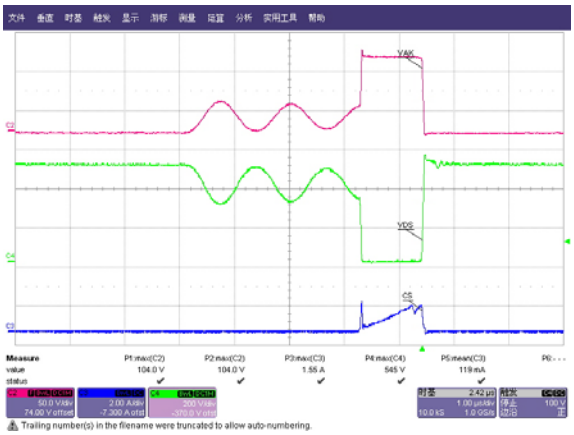
VDS ,CS & VAK normal waveform@90Vac; 1.2A load



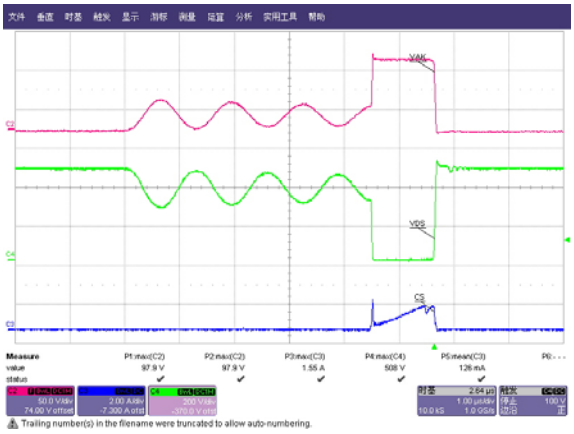
VDS ,CS & VAK normal waveform@264Vac; full load



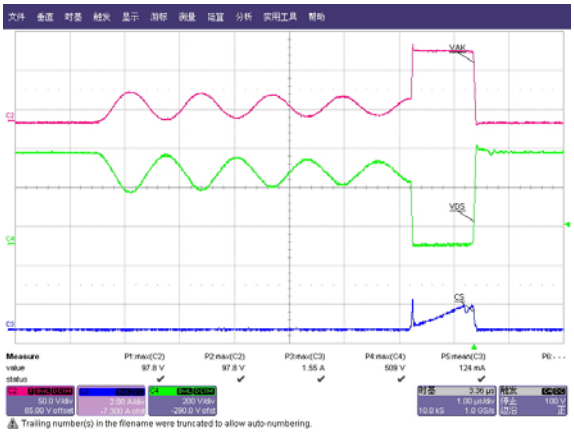
VDS ,CS & VAK normal waveform@264Vac; 3.0A load



VDS ,CS & VAK normal waveform@264Vac; 2.0A load

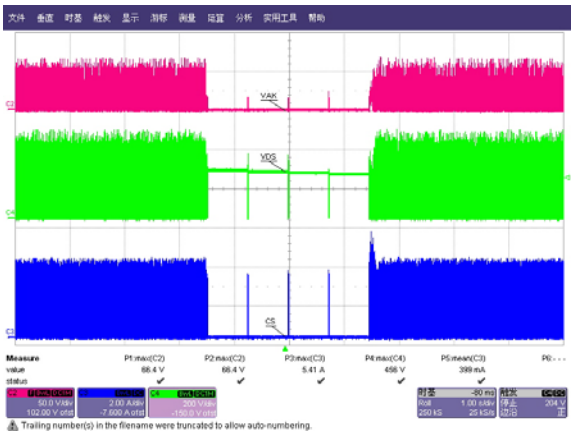


VDS ,CS & VAK normal waveform@264Vac; 1.6A load

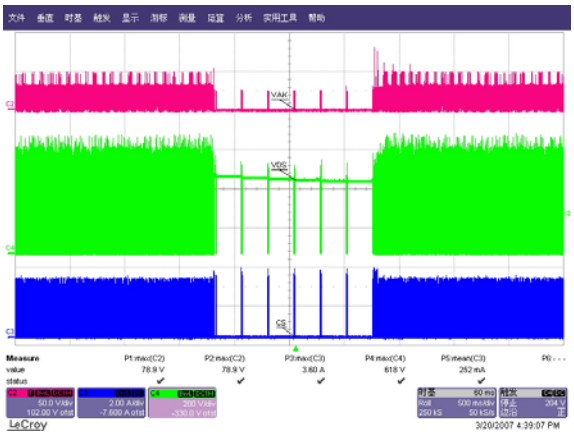


VDS ,CS & VAK normal waveform@264Vac; 1.4A load

4.2.3 VDS ,CS & VAK output short waveform



VDS ,CS & VAK output short waveform@90Vac; full load



VDS ,CS & VAK output short waveform@264Vac; full load

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