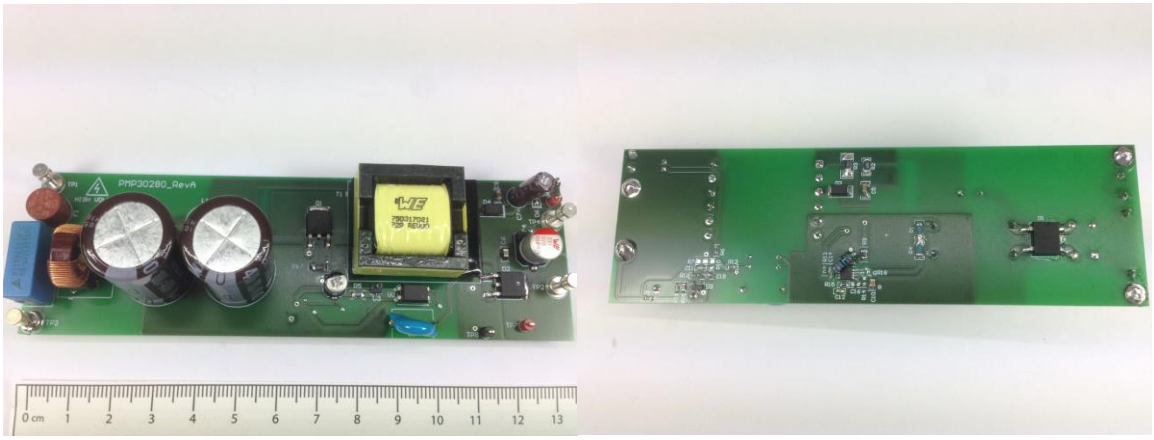
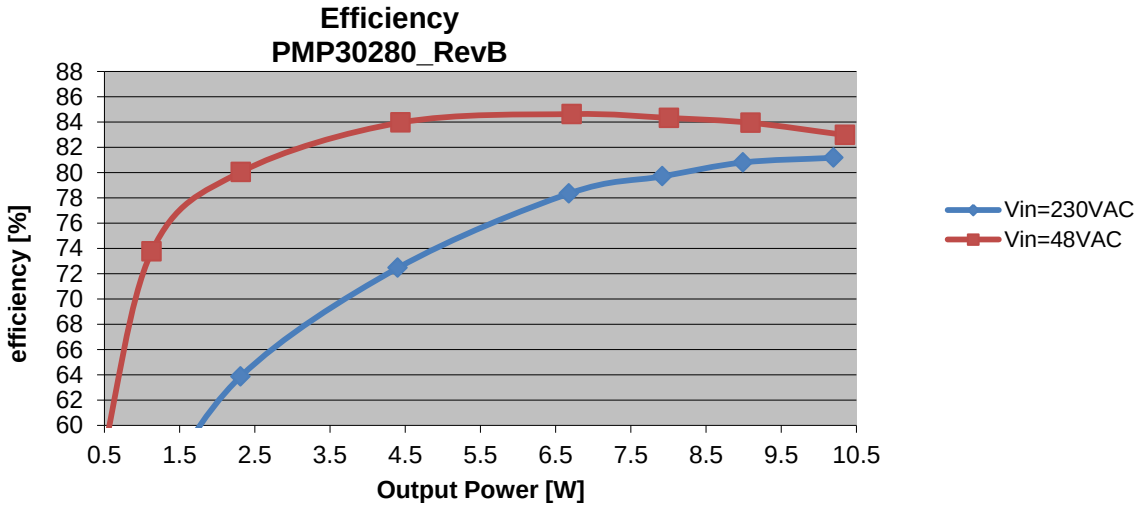
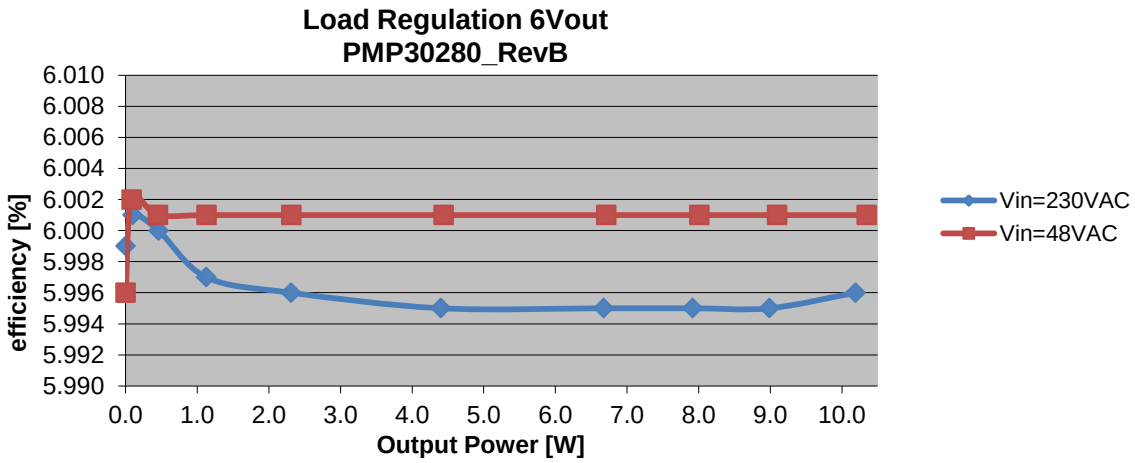
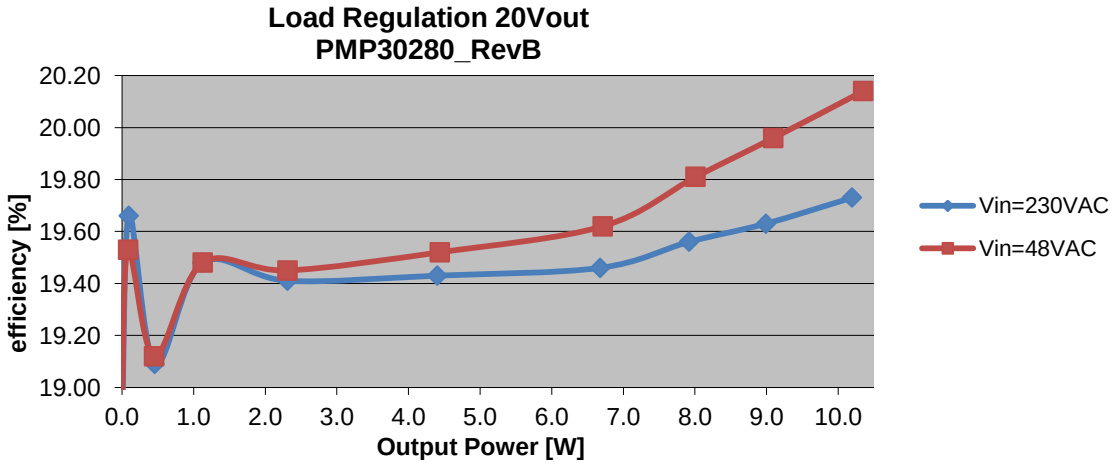


1 Efficiency and Load regulation

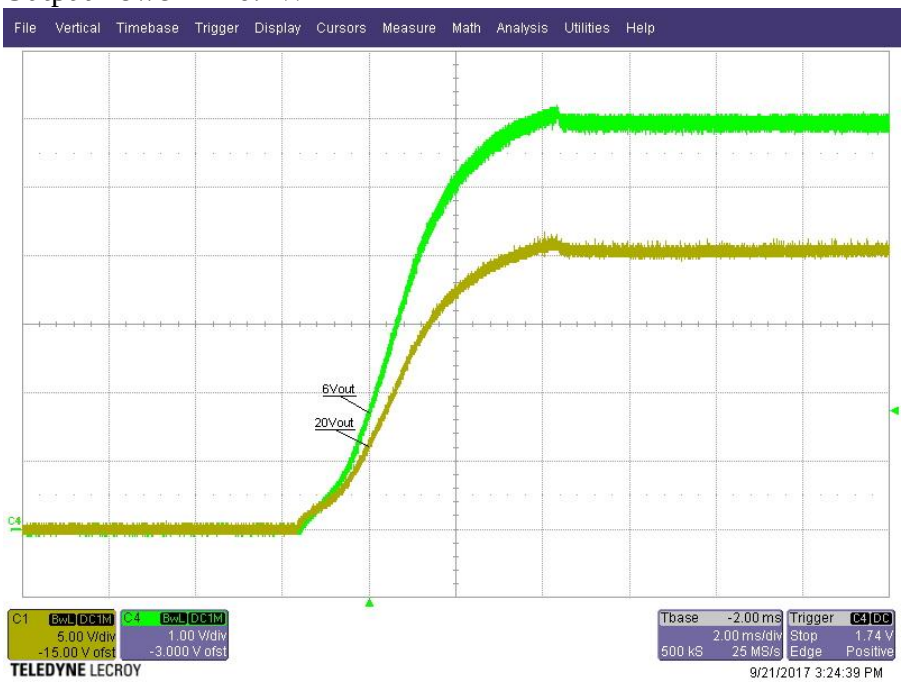



Load Regulation 6Vout
PMP30280_RevB
efficiency [%]
6.010
6.008
6.006
6.004
6.002
6.000
5.998
5.996
5.994
5.992
5.990
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Output Power [W]
Vin=230VAC
Vin=48VAC

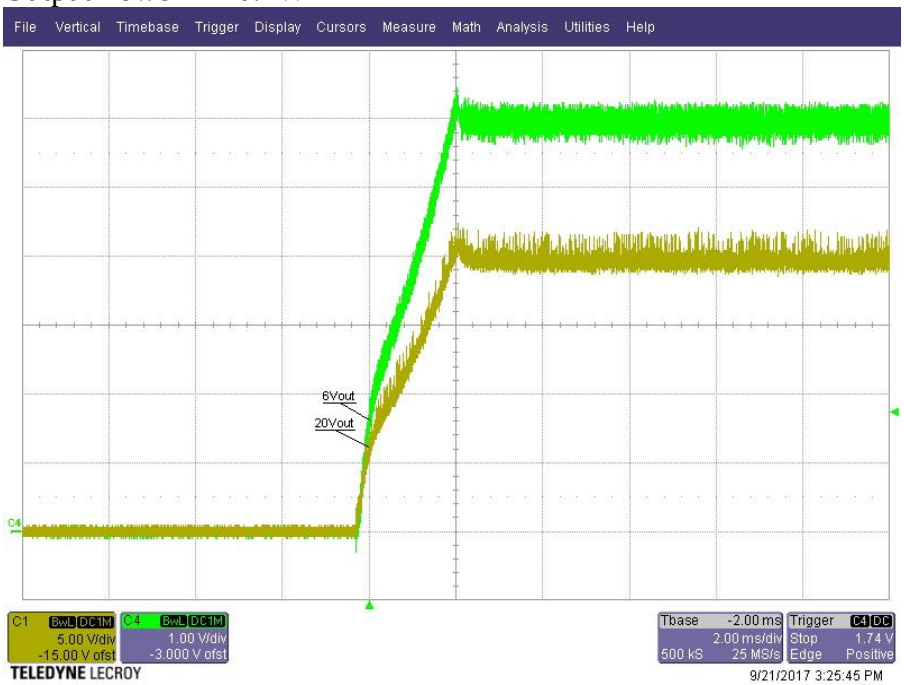

Load Regulation 20Vout
PMP30280_RevB
efficiency [%]
20.20
20.00
19.80
19.60
19.40
19.20
19.00
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Output Power [W]
Vin=230VAC
Vin=48VAC

2 Startup

Input voltage = 40VAC
Output Power = 10.2W

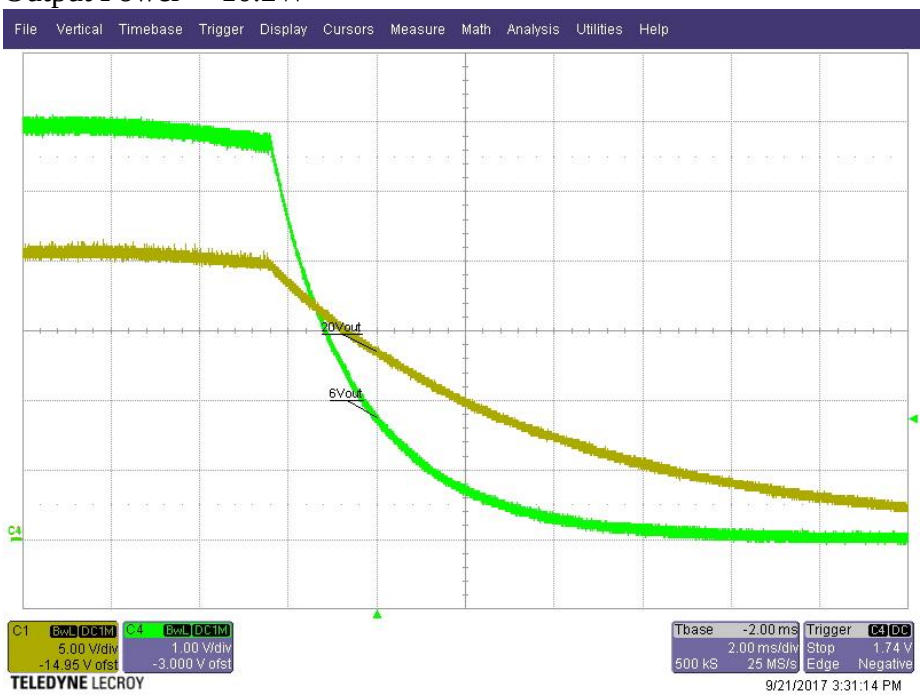


Input voltage = 230VAC
Output Power = 10.2W



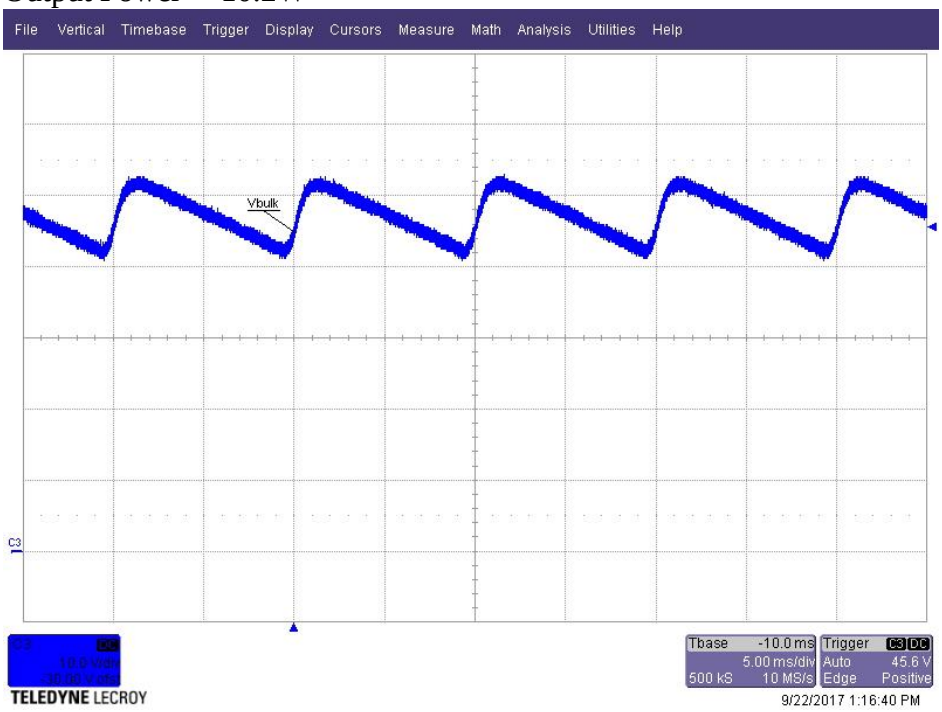
3 Shutdown

Input voltage = 230VAC
Output Power = 10.2W



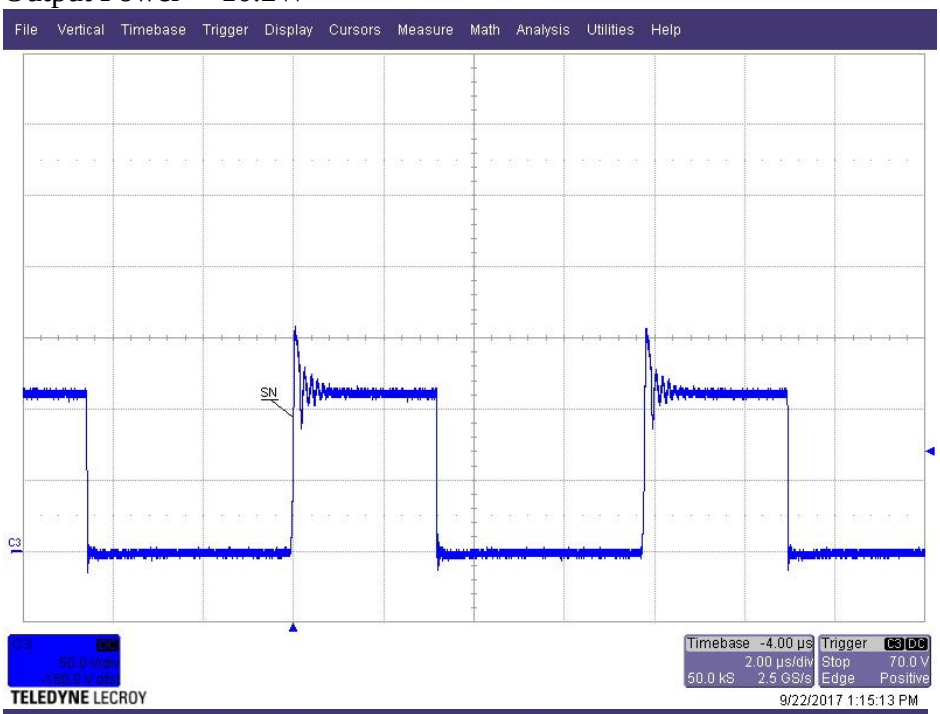
4 Input Bulk Voltage

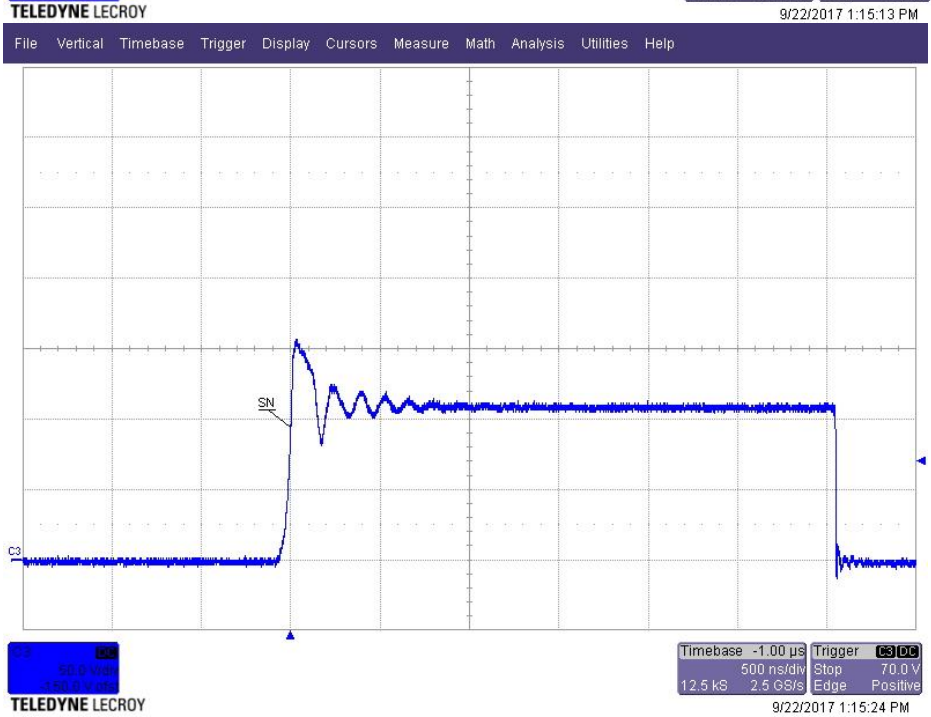
Input voltage = 40VAC
Output Power = 10.2W



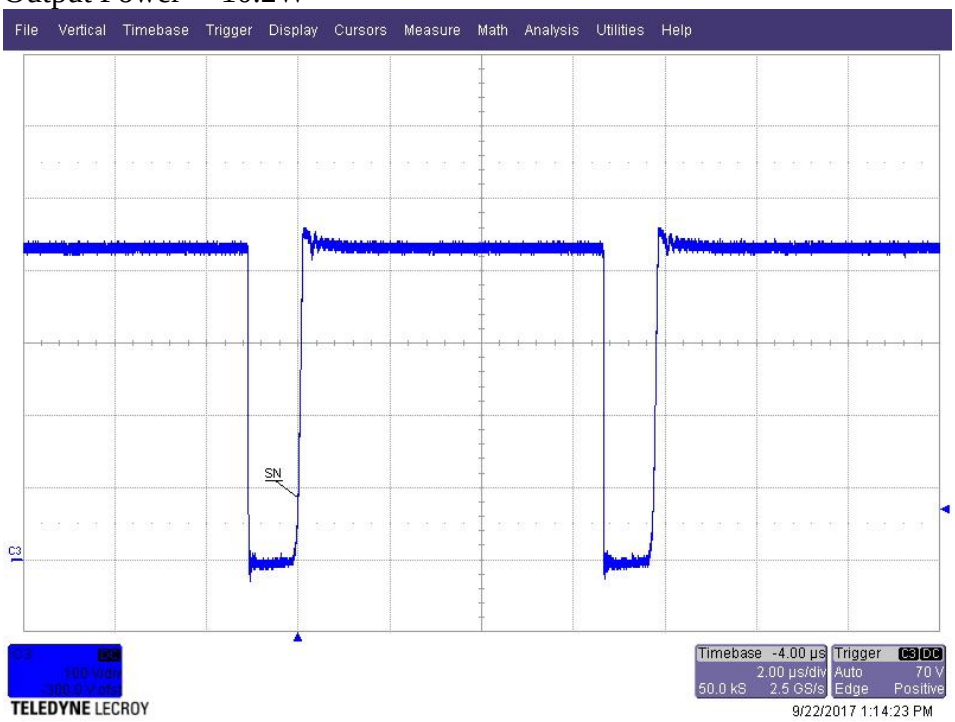
5 Switch Node

Input voltage = 40VAC
Output Power = 10.2W





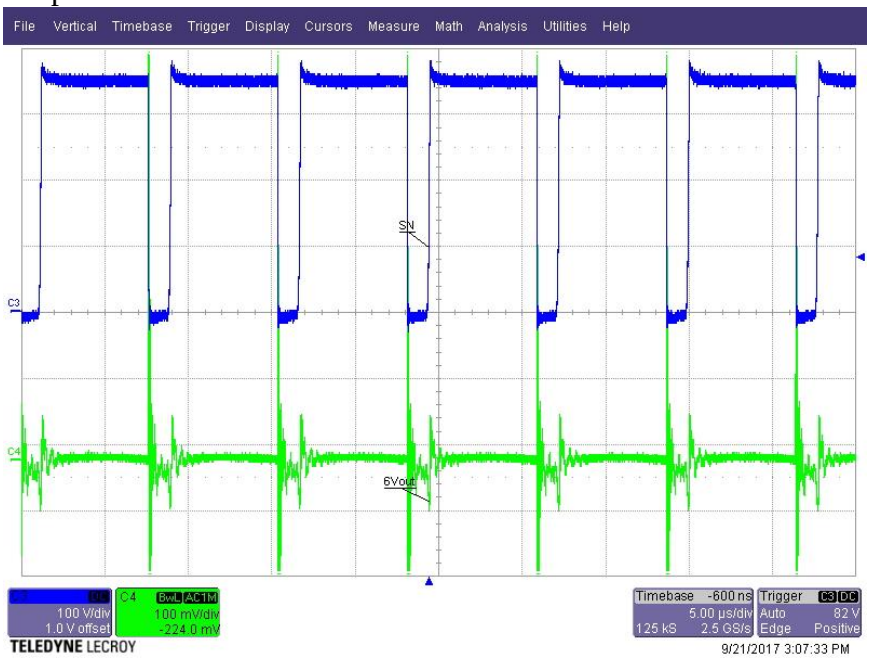
Input voltage = 273VAC
Output Power = 10.2W



6 Output Ripple

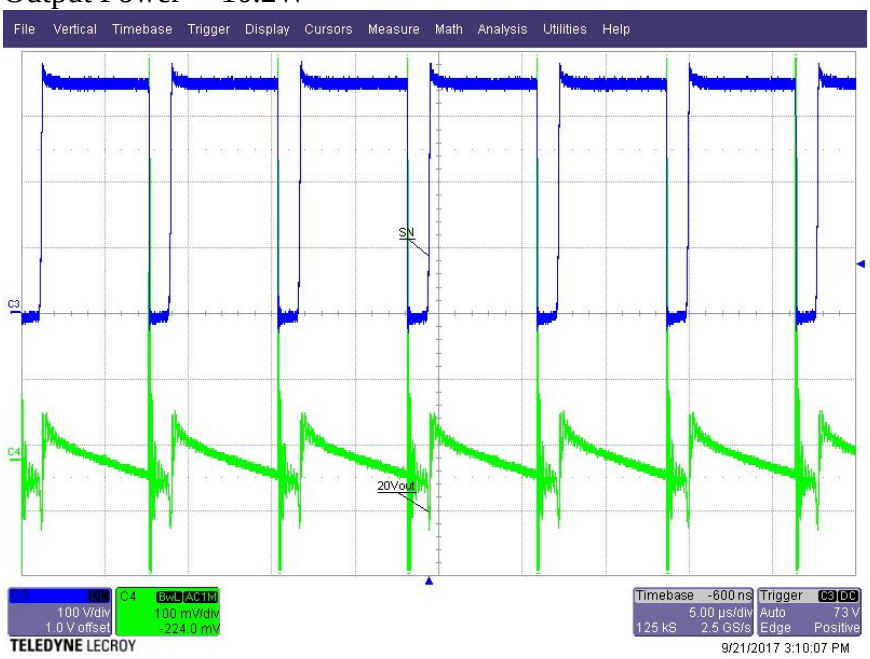
6.1 6V Output

Input voltage = 230VAC
Output Power = 10.2W

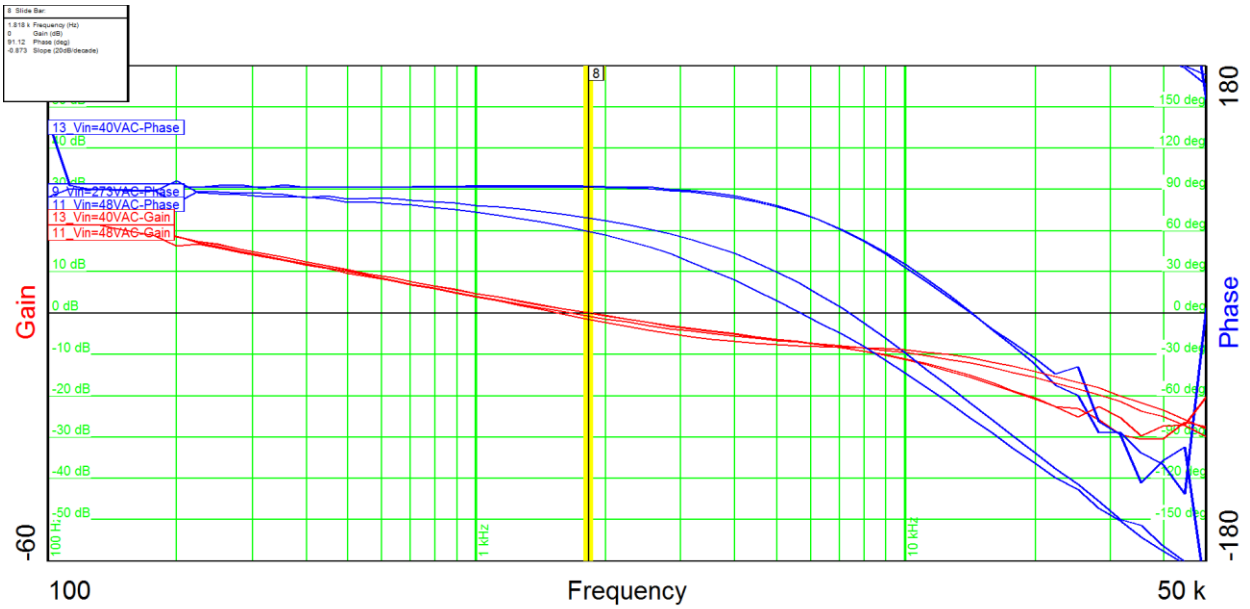


6.2 20V Output

Input voltage = 230VAC
Output Power = 10.2W



7 Control Loop Frequency Response



Input Voltage = 40VAC
Output Power = 10.2W
Phase margin = 64°
Bandwidth = 1.5kHz

Input Voltage = 48VAC
Output Power = 10.2W
Phase margin = 71°
Bandwidth = 1.7kHz

Input Voltage = 230VAC
Output Power = 10.2W
Phase margin = 91°
Bandwidth = 1.8kHz

Input Voltage = 273VAC
Output Power = 10.2W
Phase margin = 92°
Bandwidth = 1.8kHz

8 Load step

8.1 6V Output

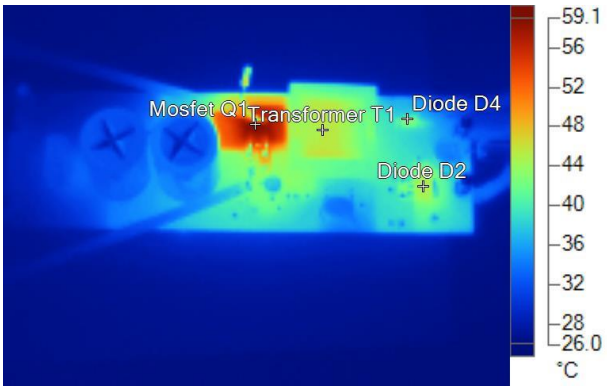
Input voltage = 48VAC
6Vout Load current = 0.1A to 1.2A

Input voltage = 230VAC
6Vout Load current = 0.1A to 1.2A

9 Thermal Analysis

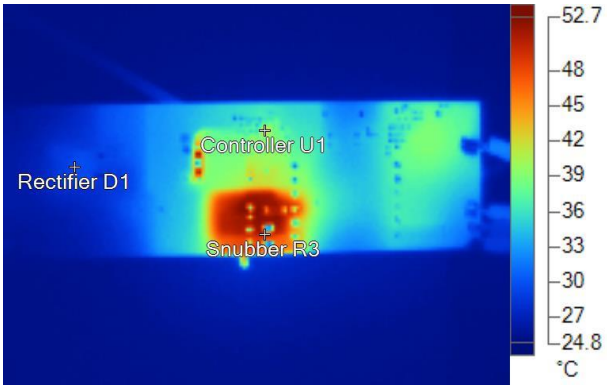
The images below show the infrared images taken from the FlexCam after 15min at full load output power.

Input voltage = 273VAC
Output Power = 10.2W
Ambient temperature = 25°C
No heatsink, no airflow



Top Vin=273VAC_1118.is2

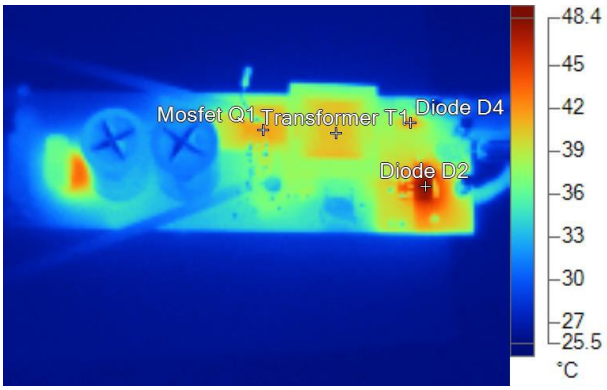
Name	Temperature	
Diode D2	45.2°C	
Mosfet Q1	59.1°C	
Transformer T1	45.8°C	
Diode D4	42.4°C	



Bottom Vin=273VAC_1115.is2

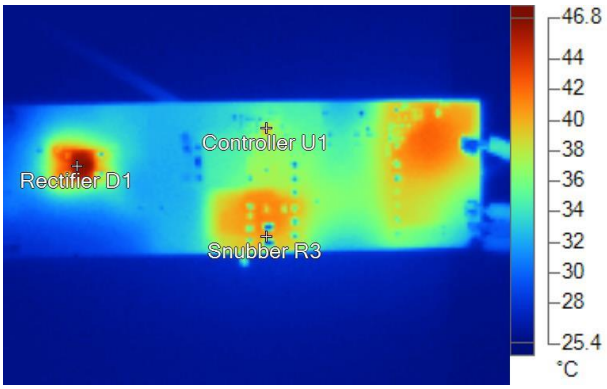
Name	Temperature	
Rectifier D1	29.9°C	
Snubber R3	50.1°C	
Controller U1	41.9°C	

Input voltage = 40VAC
Output Power = 10.2W
Ambient temperature = 25°C
No heatsink, no airflow



Top Vin=40VAC_1117.is2

Name	Temperature	
Mosfet Q1	41.6°C	
Transformer T1	40.5°C	
Diode D4	42.1°C	
Diode D2	48.4°C	



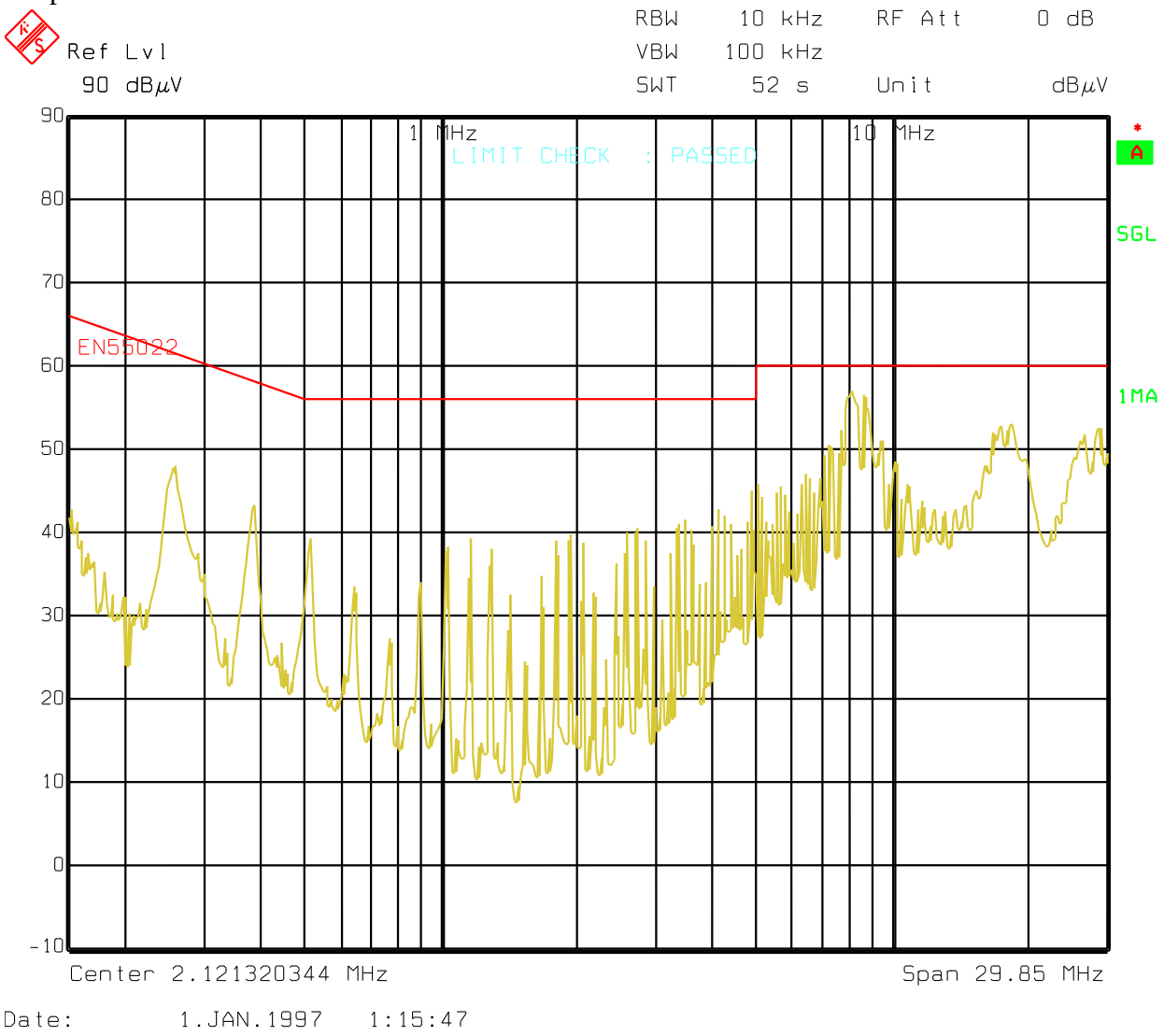
Bottom Vin=40VAC_1116.is2

Name	Temperature	
Rectifier D1	46.6°C	
Snubber R3	40.9°C	
Controller U1	39.9°C	

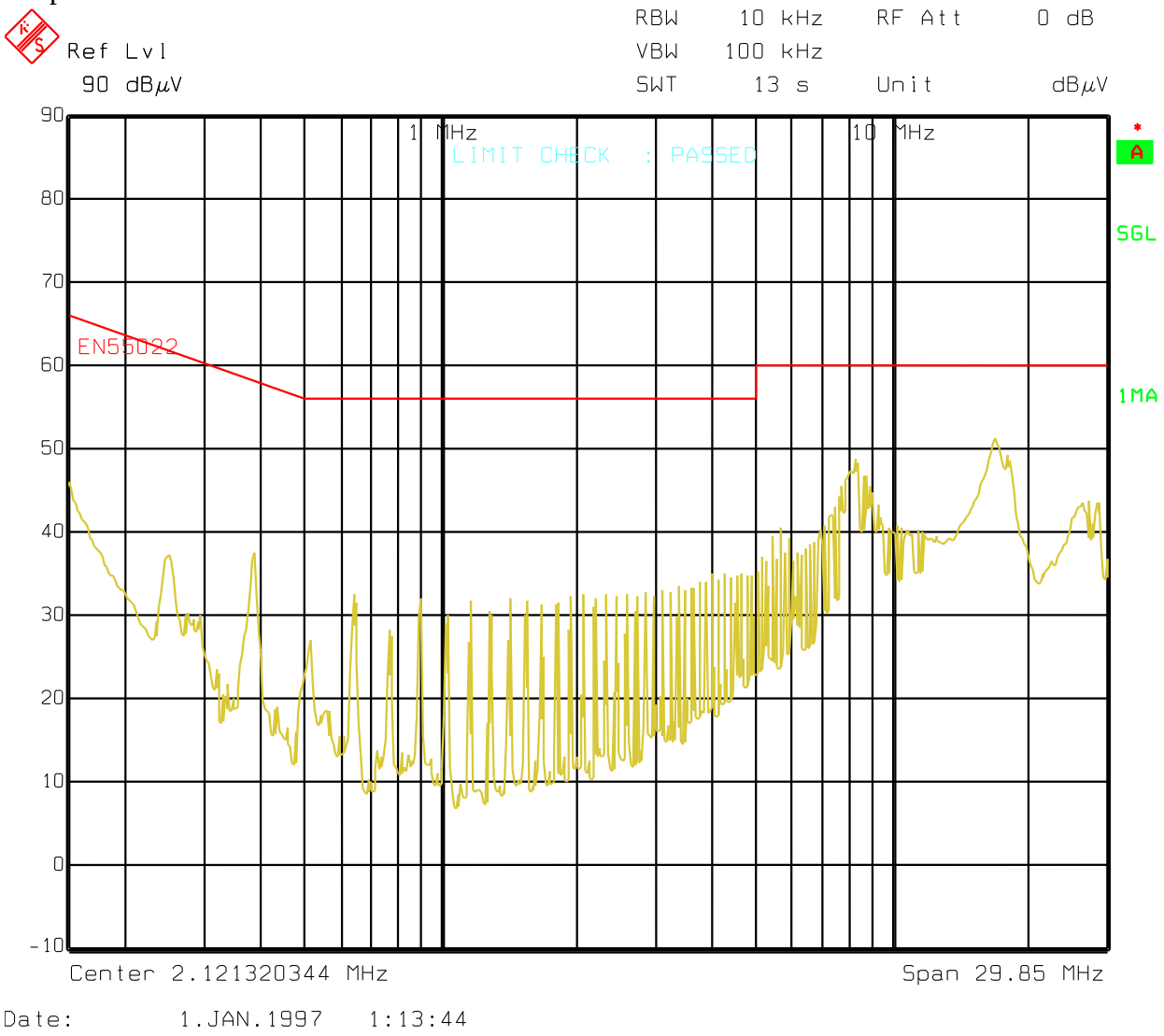
10 EMI Measurement

The graph below shows the conducted emission EMI noise and the EN55022 Class-B Quasi-Peak limits (measurement from the worst case line). The measurement is not certified. The board was connected to a LISN and an isolation transformer; the load was a power resistor. The receiver was set to Quasi-peak detector, 10 KHz bandwidth. The negative terminal of the converter has been connected to the ground of the LISN.

Input voltage = 230VAC
Output Power = 10.2W



Input voltage = 48VAC
Output Power = 10.2W



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