

# **Active Clamp Flyback ST-ONE 65W PD**

## **Test report**

Device: 65WPD

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Date: May.13, 2022

# Test Condition

- **No Load Input power at 115/230 Vac**

Symbol	Parameter	Test Conditions	Min	Nom	Max	Unit
<b>Input Parameters</b>						
V <sub>IN</sub>	Input Line Voltage		90	115 / 230	264	Vrms
f <sub>LINE</sub>	Input Line Frequency		47	50 / 60	63	Hz
P <sub>STBY</sub>	No Load Input Power-5Vout	V <sub>IN</sub> = 115 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A V <sub>IN</sub> = 230 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A		50 80		mW
P <sub>STBY</sub>	No Load Input Power-9Vout	V <sub>IN</sub> = 115 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A V <sub>IN</sub> = 230 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A		170 180		mW
P <sub>STBY</sub>	No Load Input Power-12Vout	V <sub>IN</sub> = 115 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A V <sub>IN</sub> = 230 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A		220 260		mW
P <sub>STBY</sub>	No Load Input Power-15Vout	V <sub>IN</sub> = 115 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A V <sub>IN</sub> = 230 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A		280 290		mW
P <sub>STBY</sub>	No Load Input Power-20Vout	V <sub>IN</sub> = 115 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A V <sub>IN</sub> = 230 V <sub>RMS</sub> , I <sub>OUT</sub> = 0 A		180 220		mW

- **Base on ST 65W demoboard**

# Load and Line Regulation Test Result

- 5V/3A

## Load and Line Regulation at 5Vout

Loading(%)	115Vac(V)	230Vac(V)	SPEC Limit(V)	
0	5.10	5.11	4.85	5.15
10	4.88	4.89		
20	4.85	4.88		
33	4.93	4.91		
50	5.02	5.01		
75	5.02	5.02		
83	5.02	5.03		
100	5.02	5.03		

- Base on ST 65W demoboard

# Load and Line Regulation Test Result

- 9V/3A

## Load and Line Regulation at 9Vout

Loading(%)	115Vac(V)	230Vac(V)	SPEC Limit(V)	
0	9.08	9.09	8.73	9.27
10	9.07	9.08		
25	9.06	9.09		
50	9.07	9.07		
75	9.06	9.05		
100	9.02	9.02		

- Base on ST 65W demoboard

# Load and Line Regulation Test Result

- 12V/3A

## Load and Line Regulation at 12Vout

Loading(%)	115Vac(V)	230Vac(V)	SPEC Limit(V)	
0	12.05	12.08	11.64	12.36
10	11.85	11.86		
20	11.87	11.87		
50	11.88	11.89		
75	11.87	11.90		
100	11.85	11.88		

- Base on ST 65W demoboard

# Load and Line Regulation Test Result

- 15V/3A

## Load and Line Regulation at 15Vout

Loading(%)	115Vac(V)	230Vac(V)	SPEC Limit(V)	
0	15.08	15.08	14.55	15.45
10	15.06	15.09		
25	15.05	15.04		
50	15.06	15.06		
75	15.05	15.06		
100	15.02	15.00		

- Base on ST 65W demoboard

# Load and Line Regulation Test Result

- 20V/3.25A

## Load and Line Regulation at 20Vout

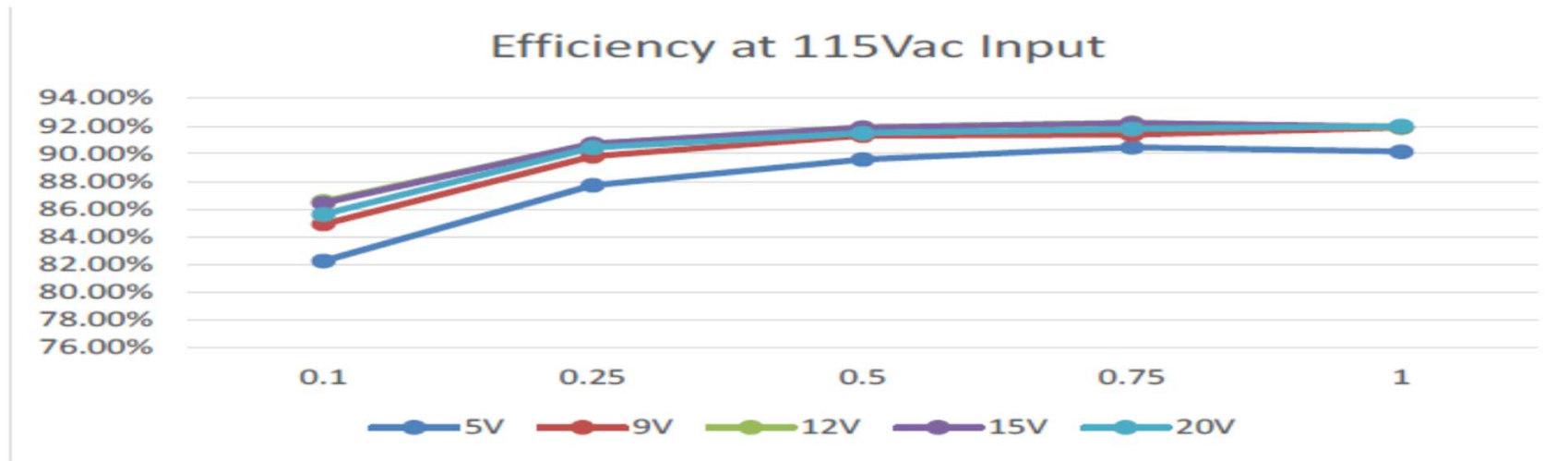
Loading(%)	115Vac(V)	230Vac(V)	SPEC Limit(V)	
0	20.05	20.06	19.4	20.6
10	20.03	20.03		
25	20.02	20.03		
50	20.01	20.02		
75	20.01	20.01		
100	20.00	20.00		

- Base on ST 65W demoboard

# Efficiency Test Result



## ● Efficiency at 115Vac Input



	% Loading	5V	9V	12V	15V	20V
EU CoC Rev.05-Tier2 Limit for 10% Loading		72.48%	77.30%	78.30%	78.85%	78.85%
115Vac 60Hz Input	10%	82.25%	84.92%	86.56%	86.45%	85.64%
	25%	87.74%	89.83%	90.73%	90.73%	90.45%
	50%	89.59%	91.32%	91.91%	91.89%	91.50%
	75%	90.47%	91.39%	92.25%	92.21%	91.80%
	100%	90.16%	91.90%	91.88%	91.95%	92.01%
Result-4 Points Average		89.49%	91.11%	91.69%	91.70%	91.44%
EU CoC Rev.05-Tier2 Limit		81.84%	87.30%	88.30%	88.85%	88.85%

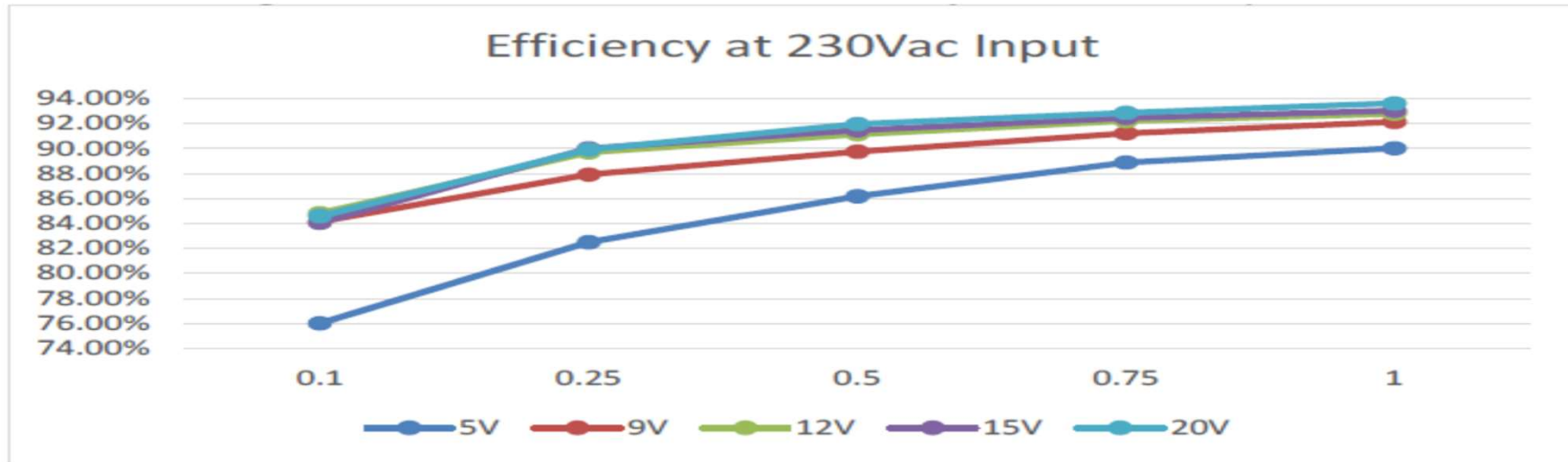
● Base on ST 65W demoboard



# Efficiency Test Result



## ● Efficiency at 230Vac Input



	% Loading	5V	9V	12V	15V	20V
EU CoC Rev.05-Tier2 Limit for 10% Loading		72.48%	77.30%	78.30%	78.85%	78.85%
230Vac 50Hz Input	10%	76.01%	84.14%	84.80%	84.07%	84.58%
	25%	82.50%	87.90%	89.68%	90.00%	89.91%
	50%	86.17%	89.74%	91.12%	91.43%	91.95%
	75%	88.86%	91.20%	92.19%	92.42%	92.83%
	100%	90.00%	92.11%	92.76%	93.01%	93.60%
Result-4 Points Average		86.88%	90.24%	91.44%	91.72%	92.07%
EU CoC Rev.05-Tier2 Limit		81.84%	87.30%	88.30%	88.85%	88.85%

● Base on ST 65W demoboard

# Waveform Checked



- Startup Waveform

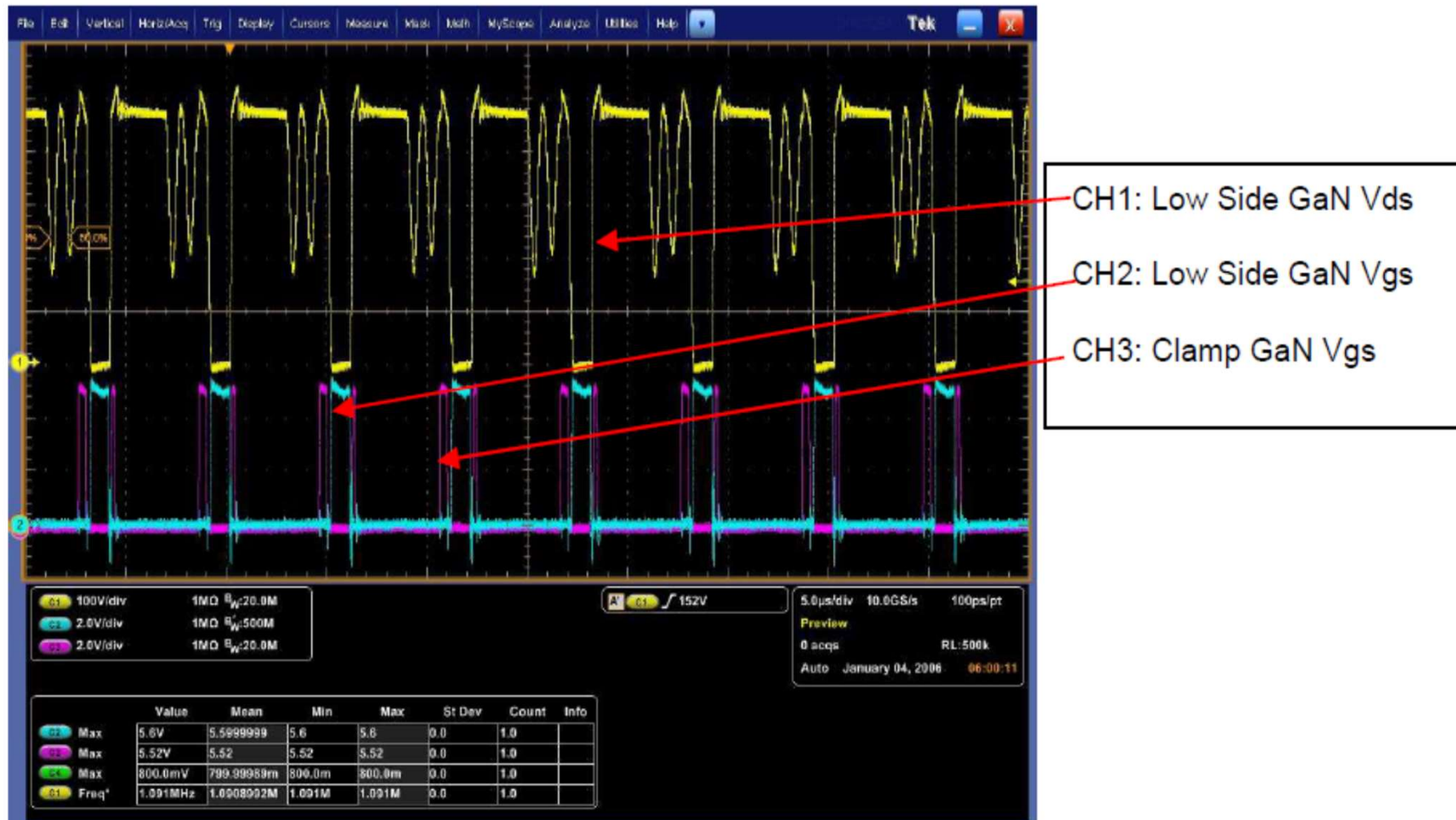


- Base on ST 65W demoboard

# Waveform Checked

## ● Normal Operation Waveform

--Primary side typical Waveforms-Normal Operation with 230Vin 20Vout/1.5A

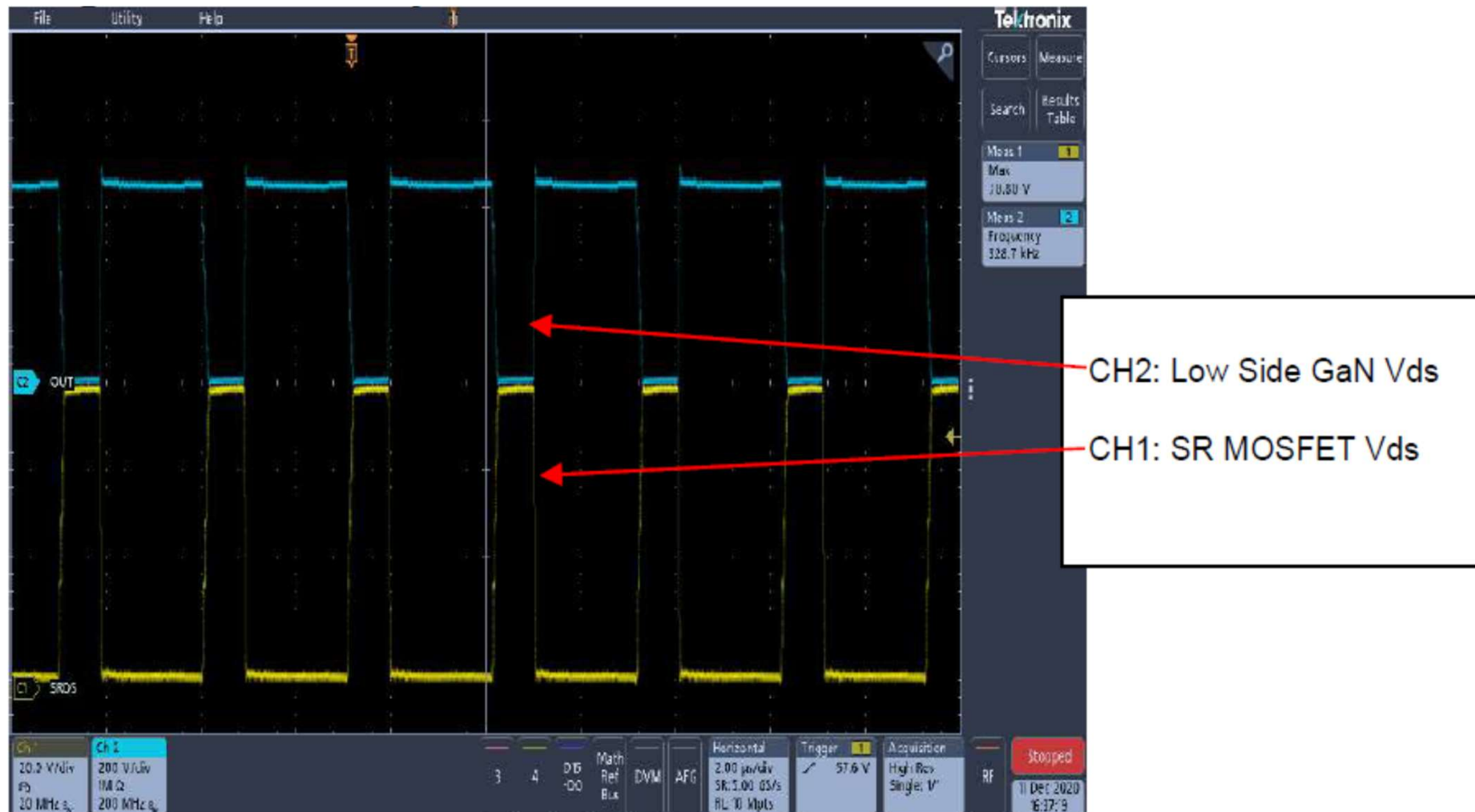


● Base on ST 65W demoboard

# Waveform Checked

## ● Normal Operation Waveform

---Secondary SR MOSFET Vds at 20V 3.25A



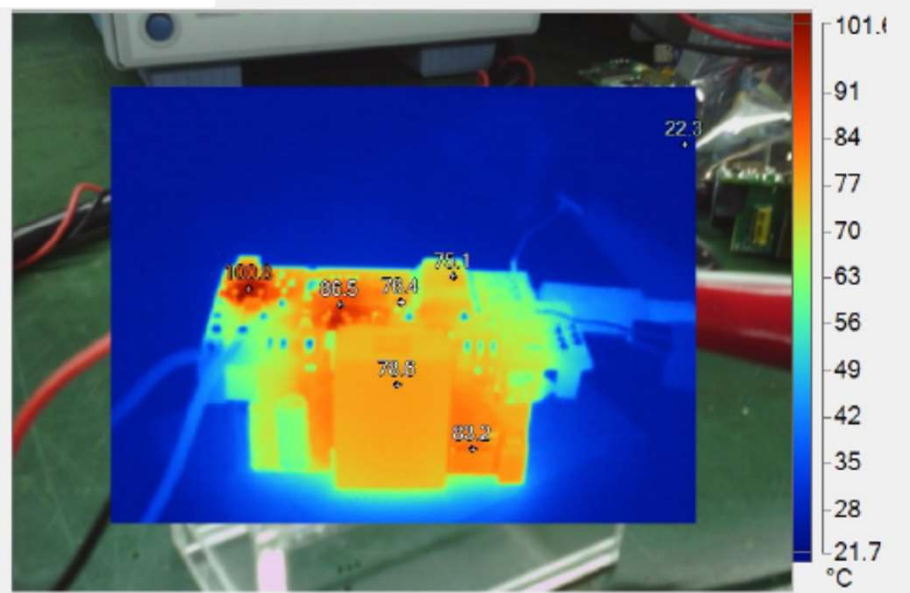
● Base on ST 65W demoboard

# Thermal Test

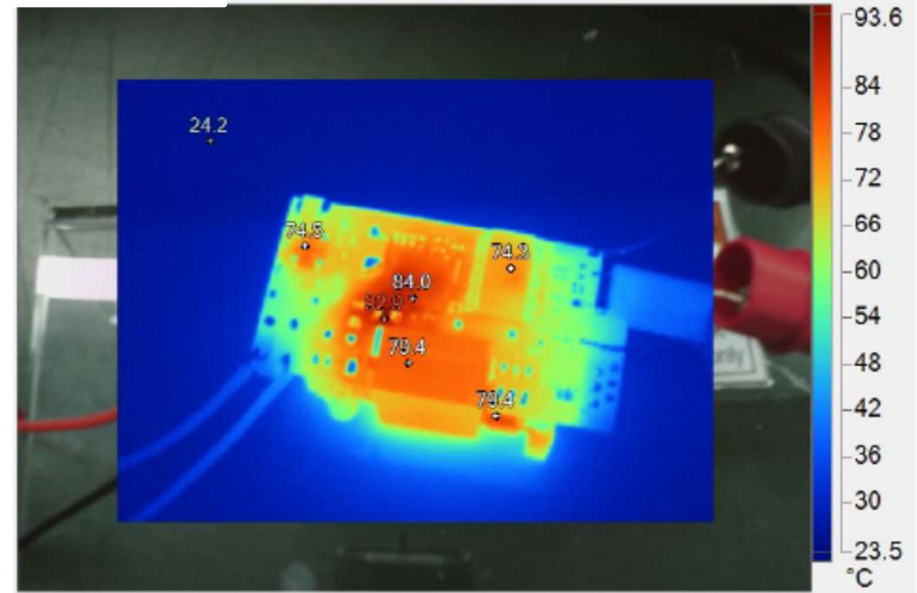
Key components temperature at 20Vout/3.25A, Ta=25°C

Devices	115Vac	230Vac
	Max Temp	Max Temp
MasterGaN2	86.5	84
STONE	75.1	74.3
Transformer	78.6	79.4
SR MOS	83.2	79.4
Bridge Diode	100	74.5

115Vac Input 20V/3.25A



230Vac Input 20V/3.25A



- Base on ST 65W demoboard