

Test results

10 Test results

10.1 Efficiency

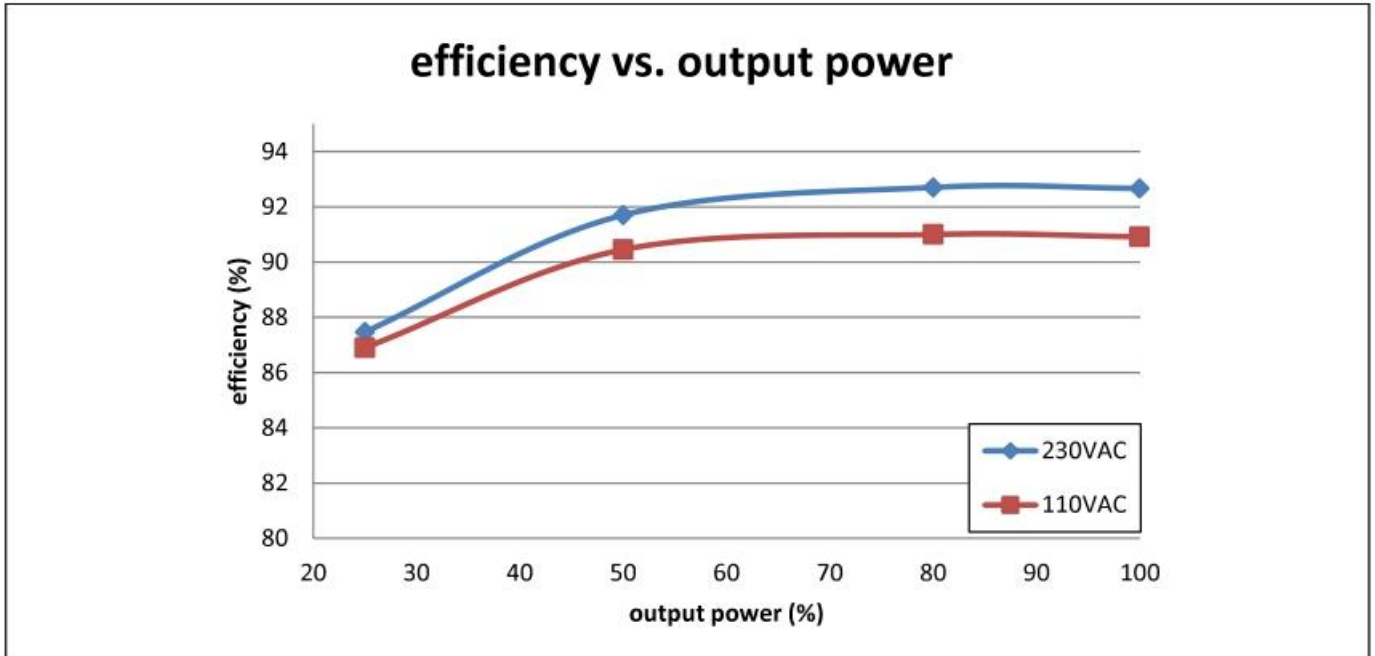


Figure 14 Efficiency measurements

The average efficiency is higher than 88.3% for both high and low line over the load range from 25% to 100%. The full load efficiency at 230 V<sub>AC</sub> reaches 92.6% with an average efficiency of 91.1%.

10.2 Standby power

The standby power consumption is less than 270 mW at 230 V<sub>AC</sub> with 152 mW load.  
Standby power consumption

Loading	Input Power (mW)	
	110 VAC	230 VAC
+19 V / 0 W	69.7	85.8
+19 V / 152 mW	251.4	264

10.3 Surge immunity (EN61000-4-5)

The surge immunity test was measured with a Noiseken LSS-15AX lightning surge simulator. The output common was connected to the primary side PE.

Pass 4 kV common mode test (line to earth and neutral to earth) and

Pass 2 kV differential mode test (line to neutral).

Test results

10.4 Conducted emissions (EN55022 class B)

The conducted EMI was measured by a Schaffner SMR25503 in accordance with EN55022 (CISPR 22) class B. The demoboard was set up at maximum load (100 W) with an input voltage of 115 V<sub>AC</sub> and 230 V<sub>AC</sub>. The system passes CISPR22 Class B with over 6dB margin.

*Note The system has a metal chassis during the measurement.*

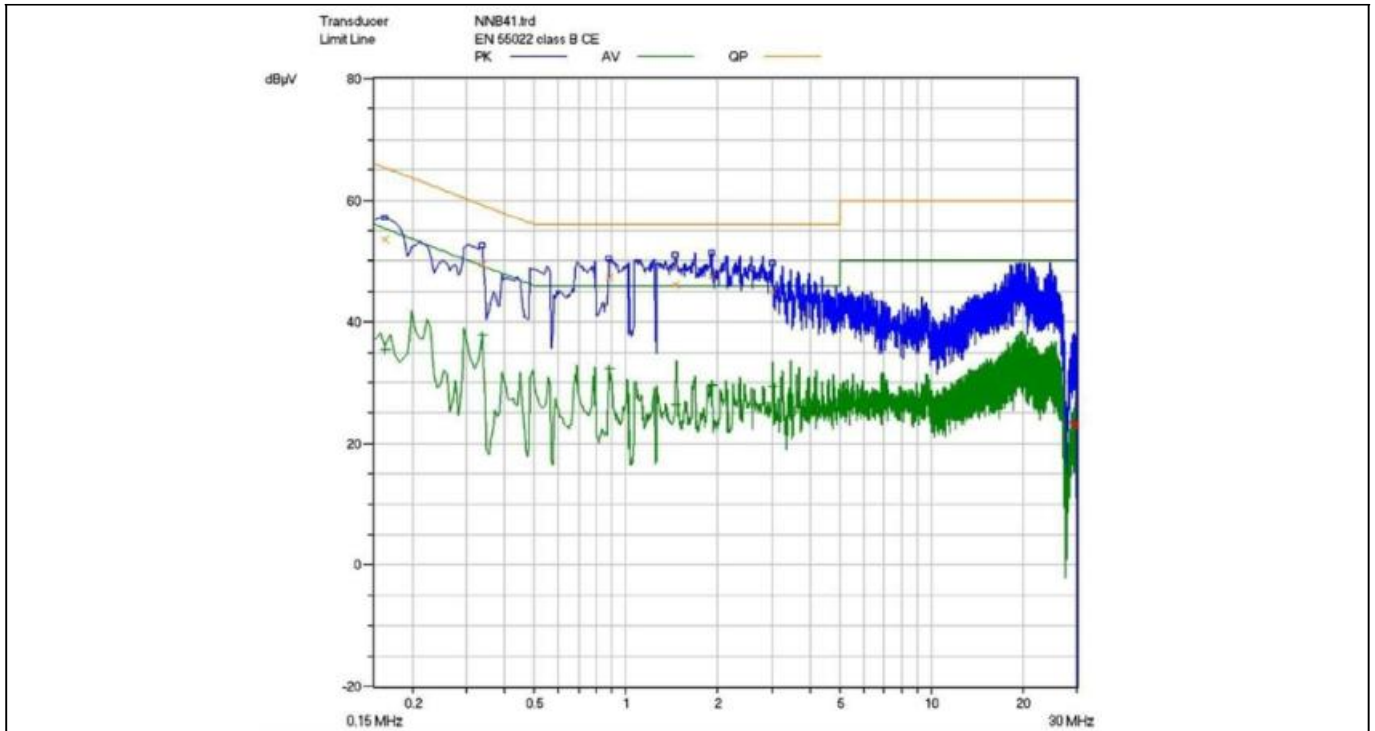


Figure 15 Conducted emissions (line) at 115 V<sub>AC</sub> and maximum load

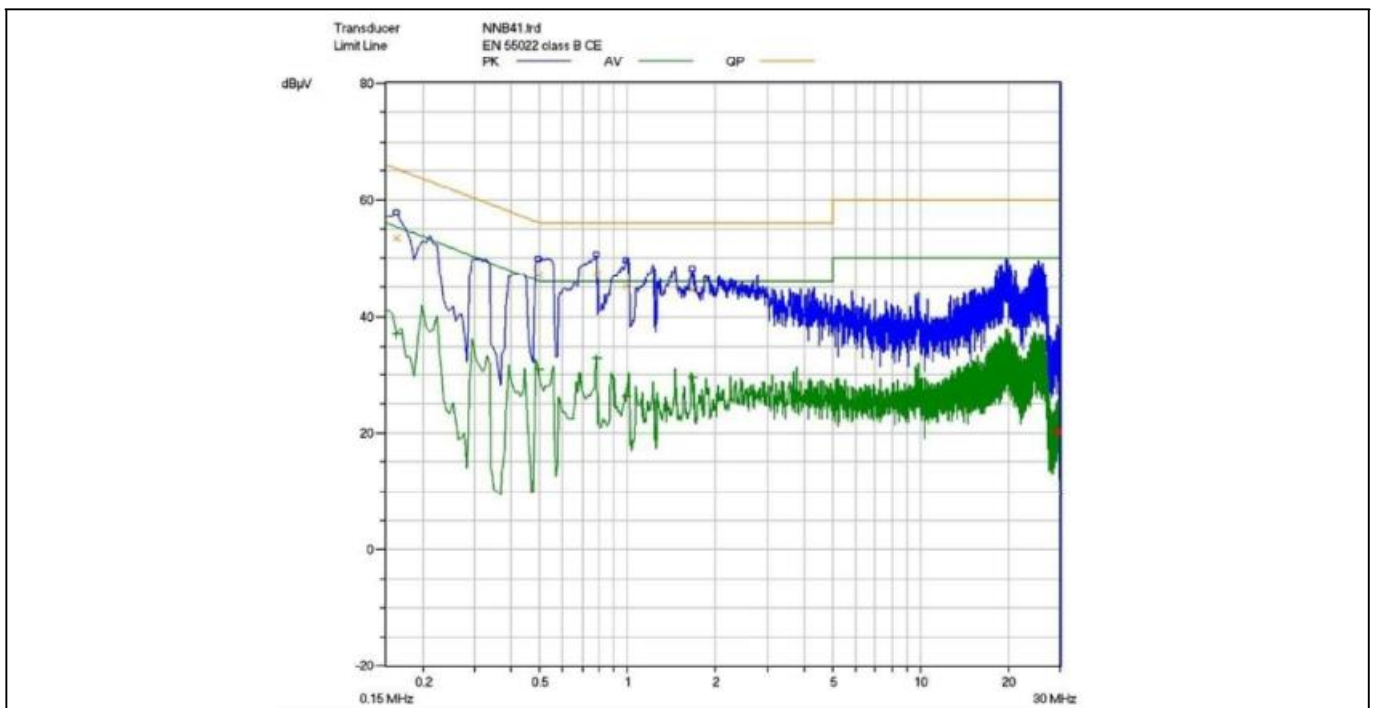


Figure 16 Conducted emissions (neutral) at 115 V<sub>AC</sub> and maximum load

Test results

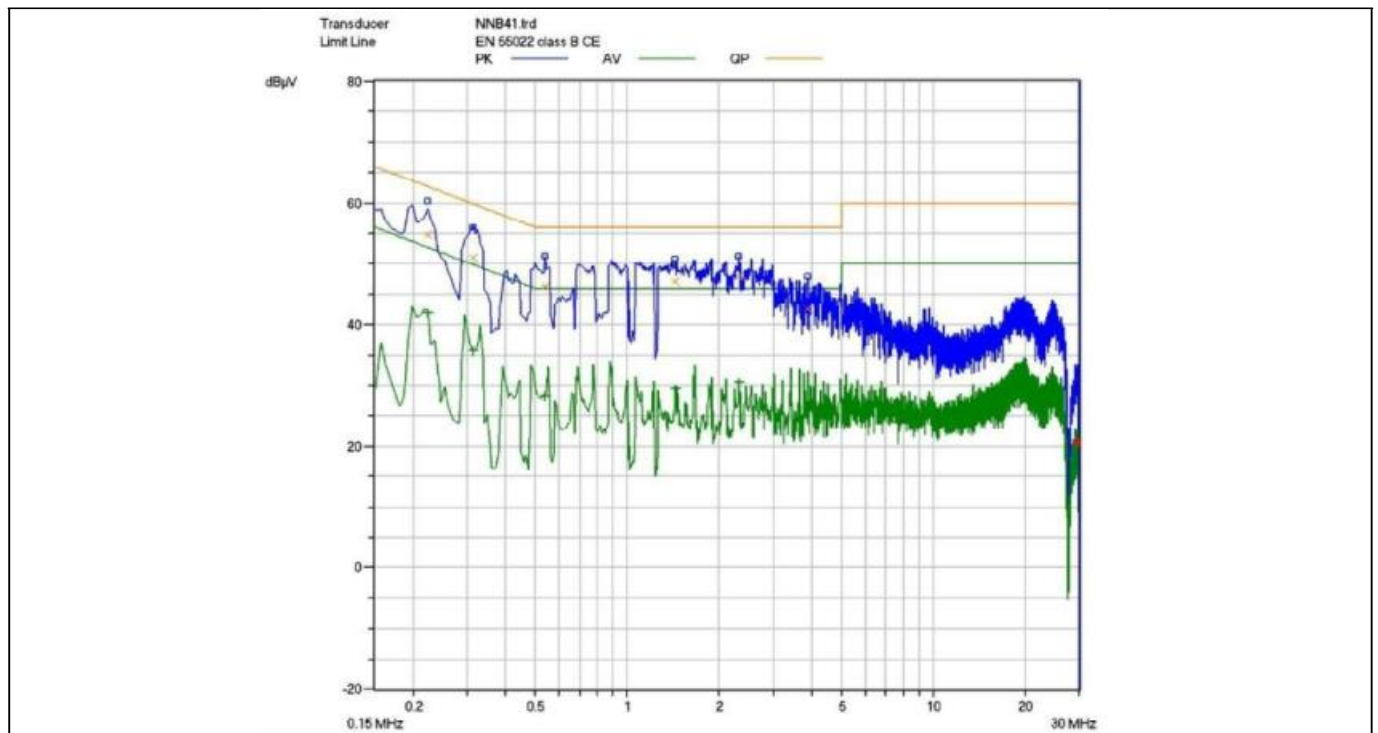


Figure 17 Conducted emissions (line) at 230 V<sub>AC</sub> and maximum load

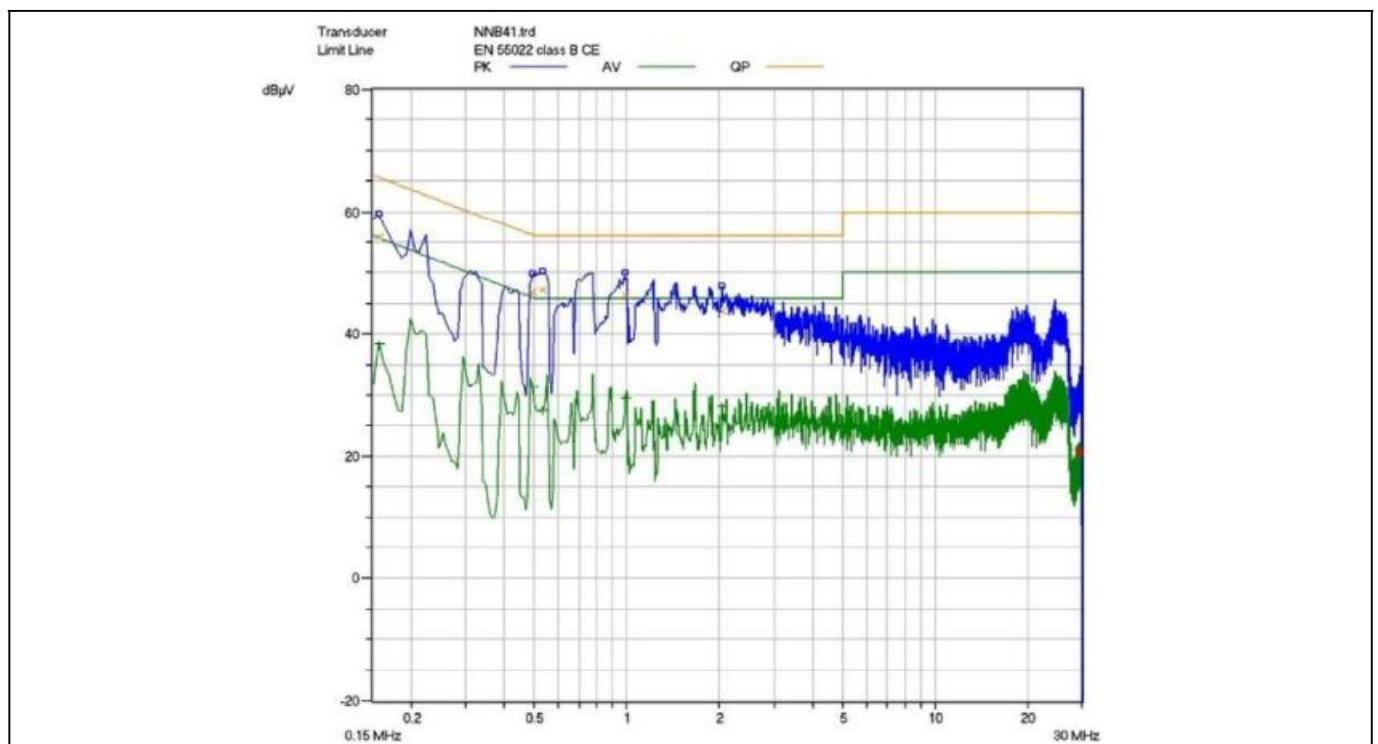


Figure 18 Conducted emissions (neutral) at 230 V<sub>AC</sub> and maximum load

### Test results

The thermal test of the open frame demoboard was performed using an infrared thermography camera (TVS-500EX) at an ambient temperature of 25°C. The measurements were taken after two hours running at full load.

**Table 4 Hottest temperature of demo board**

No.	Major component	110 V <sub>AC</sub> (°C)	230 V <sub>AC</sub> (°C)
1	LLC transformer (point 1 main PCB top side)	76.7	75.6
2	PFC inductor (point 2 main PCB top side)	72.3	60.2
3	PFC MOSFET (point 3 main PCB top side)	66.5	58.4
4	Input bridge diode (point 5 main PCB top side)	74.0	56.4
5	SR driver IC (point 1 daughter board top side)	60.0	68.0
6	SR MOSFET (point 1 daughter board bottom side)	74.0	73.3
7	SR MOSFET (point 2 daughter board bottom side)	69.9	68.9
8	IDP2303A (point 1 PCB bottom side)	75.5	66.2
9	LLC high-side MOSFET (point 3 main PCB bottom side)	54.0	50.5
10	LLC low-side MOSFET (point 2 main PCB bottom side)	54.7	50.8
11	PFC rectifier diode (point 4 main PCB bottom side)	65.2	55.0
12	PFC shunt resistor (point 6 main PCB bottom side)	65.8	46.0
13	Ambient	25	25

Test results

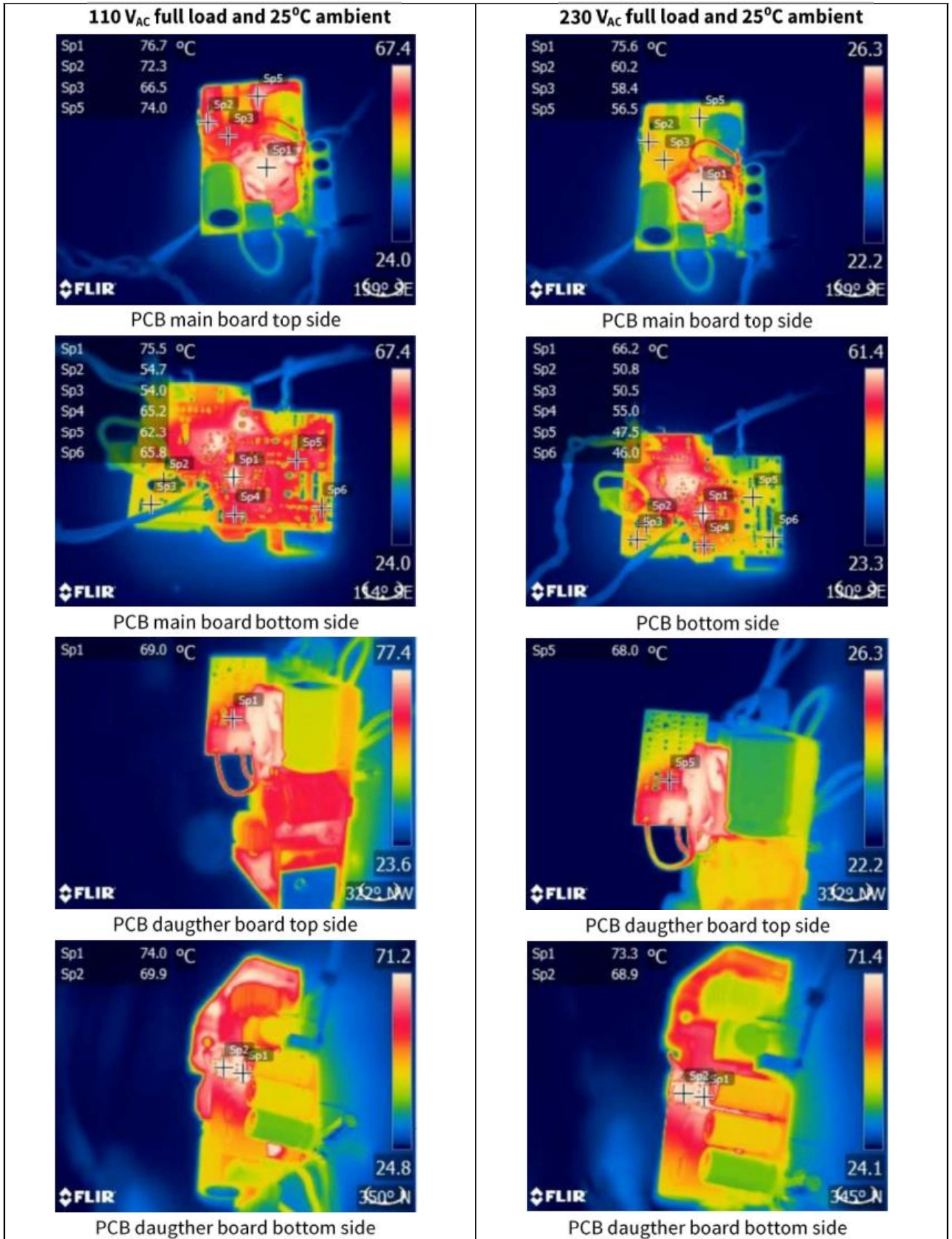


Figure 21 Infrared thermal image of DEMO-IDP2303A-120 W