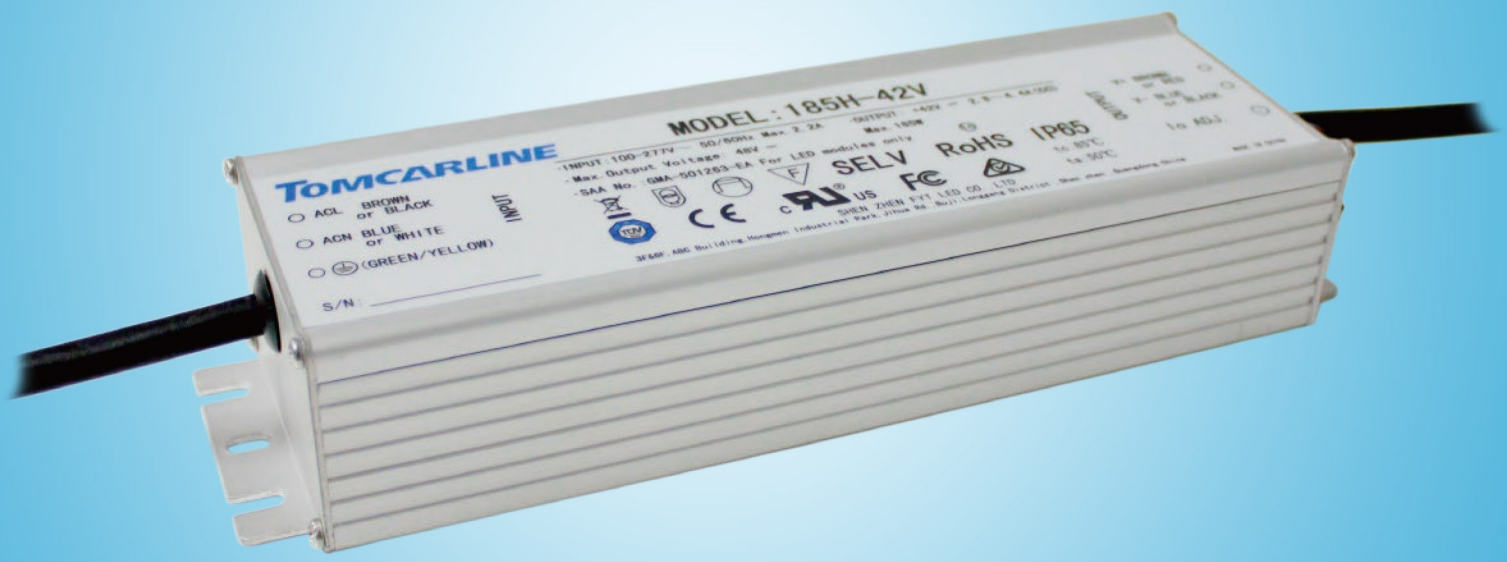
TOMCARLINE



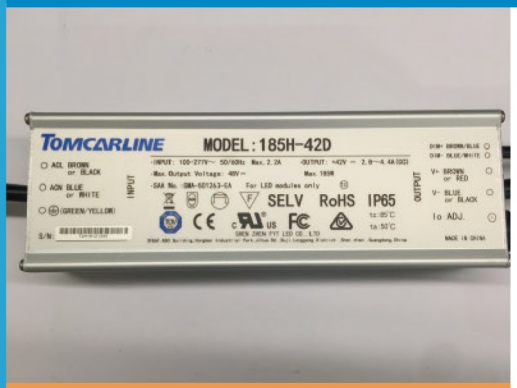
Highbay Driver

SELV IP65 F 110 M

Tomcarline, Meanwell, Inventronics 185W Driver Comparison

Tomcarline 185H-42D	Meanwell HLG-185-48B	Inventronics EUG-200S560DT

1. Overall appearance



APFC+LLC topology design:
APFC with ON Semiconductor NCP1608B,LLC with ST L6599AD

APFC+LLC topology design:
APFC with ON Semiconductor NCP1608B,LLC with ST L6599AD

APFC+LLC topology design:
APFC with ST L6563S,LLC with ST L6599AD

2. Power efficiency and THD

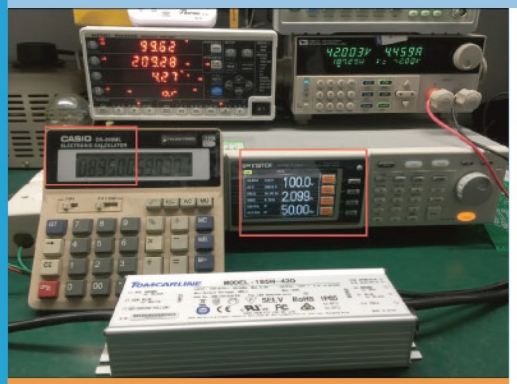
At 230Vac input power

Efficiency 92.76% THD 7.66

Efficiency 92.5% THD 10.74

Efficiency 91.27% THD 5.47

At 100Vac input power



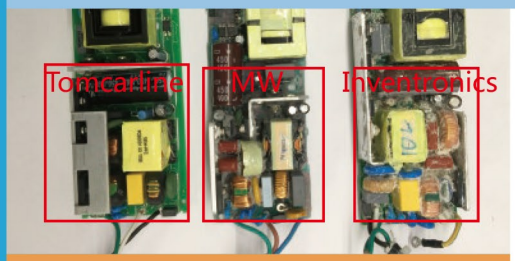
Efficiency 89.5% THD 4.27

Efficiency 89.66% THD 5.7

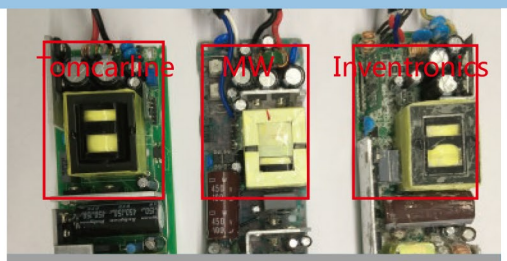
Efficiency 86.79% THD 5.42

3. PCB layout and component assembly

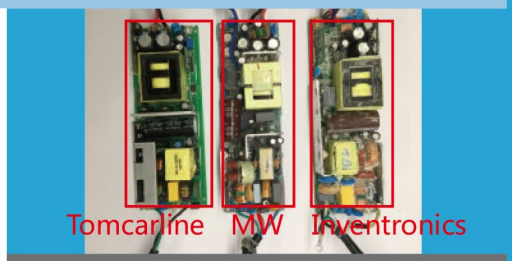
Layout of Top-side components



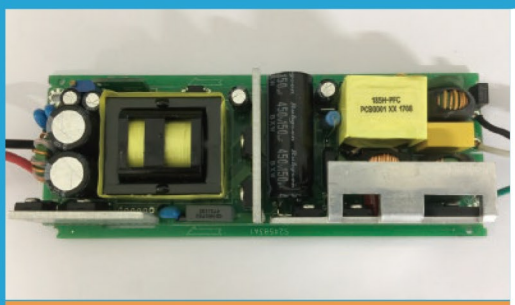
Input AC part



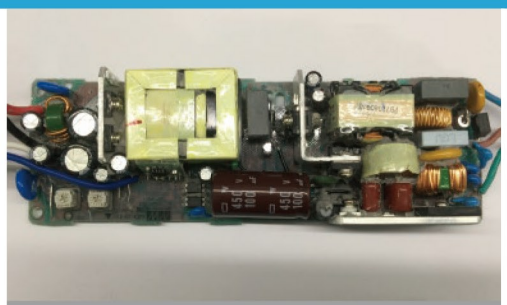
Output DC part



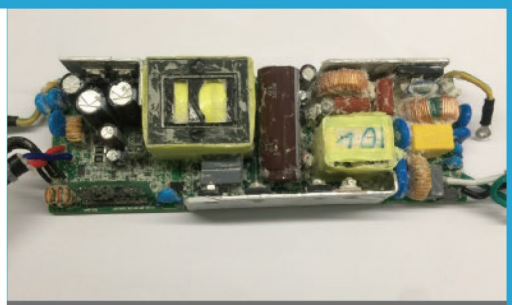
PCBA overall



The components are layout in an orderly fashion which can greatly reduce the interference between components.

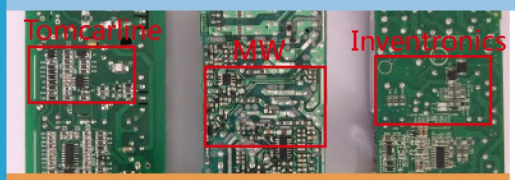


PCB is single-sided circuit board, many components are too close together, wire jumper on the bottom side of components is messy, the cooling board is very small.

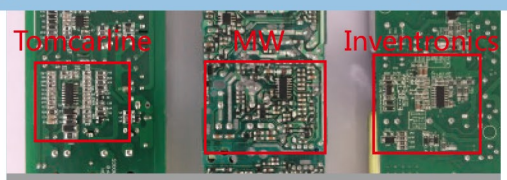


SMD and DIP components are mixed layout which interferes the driver performance;pouring sealant is low price polyurethane, high stress and serious pressing on components.

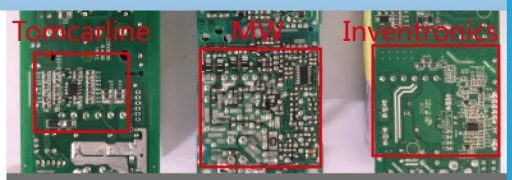
Layout of bottom-side components



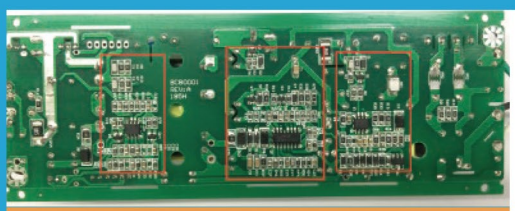
APFC (Inventroics APFC IC is on the top-side)



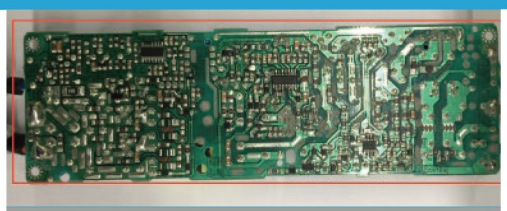
Half bridge LLC comparison



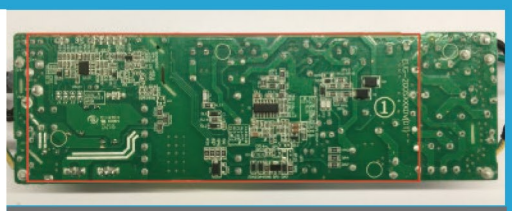
Constant current output comparison



Neat component layout, SMD components are soldered in the same direction which make easily soldering during the production and ensure better production process and quality control.

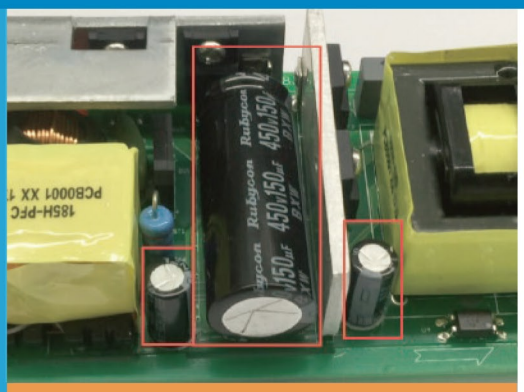


PCB is low cost single-sided circuit board, SMD components are closed to each other which easily cause cold solder,Non-solder,skip solder and easily cause quality problem.

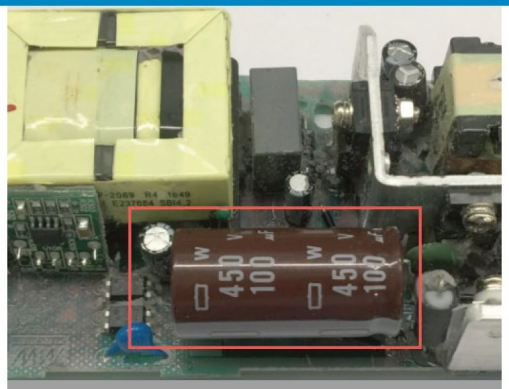


Component layout is crowded,disordered and irregular; most of SMD components are 0603 small package which is low wattage, easily broken, not good for lifetime.

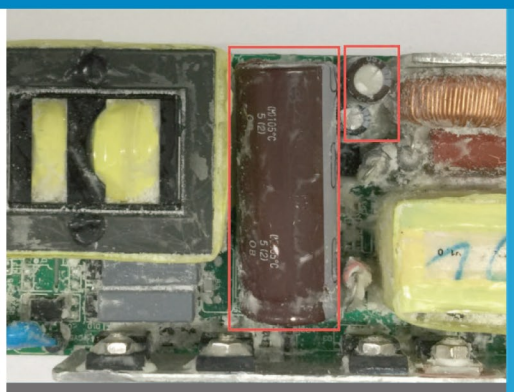
4. Key component for lifetime---Capacitor comparison



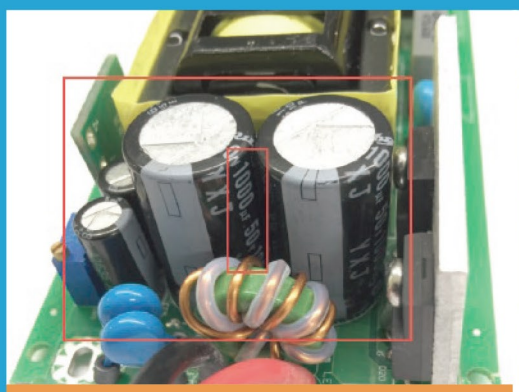
"PFC step-up output capacitor: The No.1 brand Rubycon from Japan is used, longer lifetime warranty."



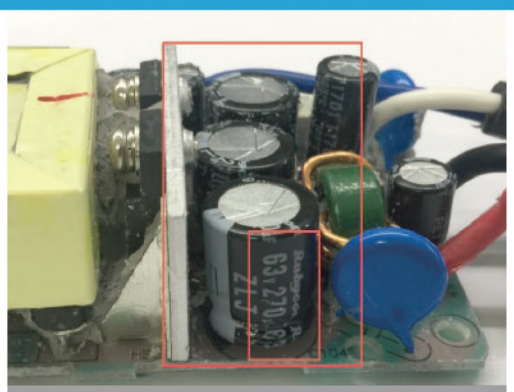
PFC step-up output capacitor: The No.3 brand NCC from Japan with low price is used, which is not good for lifetime.



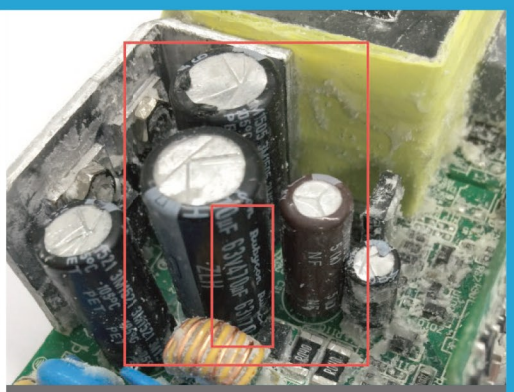
PFC step-up output capacitor: The No.3 brand NCC from Japan with low price is used, which is not good for lifetime.



Output electrolytic capacitor: Rubycon brand with total output capacity 2000uF, ultra-Large capacity ensure longer lifetime.



Output electrolytic capacitor: Rubycon brand with total output capacity 977uF, much less capacity cannot ensure long lifetime.



Output electrolytic capacitor: Rubycon brand with total output capacity 1210uF, less capacity cannot ensure long lifetime.

Tomcarline Driver Low-temperature Start Test(-30℃ to -40℃)

100Vac	230Vac	277Vac

At as low as -30℃ to -40℃, Tomcarline driver can still work properly at different working voltage.