



US 20240224464A1

(19) **United States**(12) **Patent Application Publication**
HUANG et al.(10) **Pub. No.: US 2024/0224464 A1**(43) **Pub. Date: Jul. 4, 2024**(54) **LIQUID-COOLING HEAT DISSIPATION
PLATE WITH UNEQUAL HEIGHT PIN-FINS
AND ENCLOSED LIQUID-COOLING
COOLER HAVING THE SAME**(52) **U.S. Cl.**
CPC **H05K 7/20263** (2013.01); **H05K 7/20409**
(2013.01)(71) Applicant: **AMULAIRE THERMAL
TECHNOLOGY, INC.**, New Taipei
City (TW)(72) Inventors: **YI-HSIN HUANG**, New Taipei City
(TW); **CHUN-LUNG WU**, New Taipei
City (TW); **KUO-WEI LEE**, New
Taipei City (TW); **TZE-YANG YEH**,
New Taipei City (TW)(21) Appl. No.: **18/147,672**(22) Filed: **Dec. 28, 2022****Publication Classification**(51) **Int. Cl.**
H05K 7/20 (2006.01)(57) **ABSTRACT**

A liquid-cooling heat dissipation plate with unequal height pin-fins and an enclosed liquid-cooling cooler having the same are provided. The liquid-cooling heat dissipation plate includes a heat dissipation plate body, a plurality of full-height pin-fins, and a plurality of non-full-height pin-fins. The heat dissipation plate body has a first heat dissipation surface and a second heat dissipation surface that face away from each other, the first heat dissipation surface is configured to be in contact with a plurality of heat sources, and the second heat dissipation surface is configured to be in contact with a cooling fluid. The full-height and non-full-height pin-fins are formed at the second heat dissipation surface of the heat dissipation plate body. A first heat dissipation region to an Nth heat dissipation region are defined on the heat dissipation plate body along a flowing direction of the cooling fluid.

