

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2024/0215197 A1 Zakaib et al.

Jun. 27, 2024 (43) Pub. Date:

(54) LIQUID-COOLING DEVICES, AND SYSTEMS, TO COOL MULTI-CHIP **MODULES**

(71) Applicant: CoolIT Systems, Inc., Calgary (CA)

(72) Inventors: Bradley Zakaib, Calgary (CA); Seyed Kamaleddin Mostafavi Yazdi, Calgary (CA); Jarod Domingo, Calgary (CA); Yixuan Gao, Calgary (CA)

(21) Appl. No.: 18/595,350

(22) Filed: Mar. 4, 2024

Related U.S. Application Data

- (63) Continuation of application No. 17/201,394, filed on Mar. 15, 2021, now Pat. No. 11,924,996.
- (60) Provisional application No. 63/085,882, filed on Sep. 30, 2020.

Publication Classification

(51) Int. Cl. H05K 7/20 (2006.01)

U.S. Cl. CPC H05K 7/20254 (2013.01); H05K 7/20272 (2013.01); H05K 7/20409 (2013.01)

(57)**ABSTRACT**

A heat exchanger for a liquid cooling system has an enclosure defining an internal chamber and a wall defining an external major surface of the enclosure. The enclosure extends from a first open end to an opposed second open end and an inlet passage extends from the first open end to the internal chamber. An outlet passage extends from the internal chamber to the second open end. A plurality of corrugated fins are conductively coupled with the wall defining the external major surface and positioned in the internal chamber. A liquid cooling system can include such a heat exchanger. And, an electronic device can include one or more multichip modules cooled by such a cooling system.

