



US 20240237286A9

(19) **United States**
(12) **Patent Application Publication**
Liu et al.

(10) **Pub. No.: US 2024/0237286 A9**
(48) **Pub. Date: Jul. 11, 2024**
CORRECTED PUBLICATION

(54) **IMMERSION COOLING APPARATUS AND
MANUFACTURING METHOD OF THE SAME**

Related U.S. Application Data

(60) Provisional application No. 63/418,655, filed on Oct. 24, 2022.

(71) Applicant: **Formerica Optoelectronics, Inc.**,
Hsinchu County (TW)

Publication Classification

(72) Inventors: **Joseph Chen-Kwo Liu**, Hsinchu
County (TW); **Peter Sin-Te Liu**,
Hsinchu County (TW); **Chih-Chun**
CHIANG, Hsinchu County (TW)

(51) **Int. Cl.**
H05K 7/20 (2006.01)
(52) **U.S. Cl.**
CPC **H05K 7/20272** (2013.01); **H05K 7/20236**
(2013.01); **G08B 21/18** (2013.01)

(73) Assignee: **Formerica Optoelectronics, Inc.**,
Hsinchu County (TW)

(57) **ABSTRACT**

(21) Appl. No.: **18/493,070**

(22) Filed: **Oct. 24, 2023**

Prior Publication Data

(15) Correction of US 2024/0138111 A1 Apr. 25, 2024
See (22) Filed

(65) US 2024/0138111 A1 Apr. 25, 2024

The immersion cooling apparatus includes a cooling tank having a cooling liquid; a cable having a first end and a second end and a protection tube wrapping the cable. The first end connects a first connector, and the second end connects a second connector. At least one of the first end and the second end is located in the cooling tank. The protection tube is configured to separate the cable and the cooling liquid, and the protection tube includes at least one of a hard tube, a soft tube, or a thermal shrinking tube.

