

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number

WO 2020/232372 A9

(43) International Publication Date
19 November 2020 (19.11.2020)

WIPO | PCT

(51) International Patent Classification:

H01L 23/522 (2006.01) H04B 1/036 (2006.01)
F28D 15/02 (2006.01) H05K 1/02 (2006.01)
F28D 15/04 (2006.01) H05K 7/20 (2006.01)
H01L 23/427 (2006.01) H01L 23/552 (2006.01)

92121 (US). **LE, Don**; 5775 Morehouse Drive, San Diego,
California 92121 (US).

(74) **Agent: RUDNICK, Holly**; LOZA & LOZA LLP,
305 North Second Avenue, No.127, Upland, California
91786-6064 (US).

(21) International Application Number:

PCT/US2020/033187

(22) International Filing Date:

15 May 2020 (15.05.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/848,896 16 May 2019 (16.05.2019) US
16/874,542 14 May 2020 (14.05.2020) US

(71) **Applicant: QUALCOMM INCORPORATED** [US/US];
ATTN: International IP Administration, 5775 Morehouse
Drive, San Diego, California 92121-1714 (US).

(72) **Inventors: WANG, Peng**; 5775 Morehouse Drive, San
Diego, California 92121 (US). **GAO, Le**; 5775 Morehouse
Drive, San Diego, California 92121 (US). **ROSALES,
Jorge Luis**; 5775 Morehouse Drive, San Diego, California

(81) **Designated States** (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

(54) Title: ELECTRONIC DEVICE THERMAL MANAGEMENT AND ELECTROMAGNETIC SHIELDING

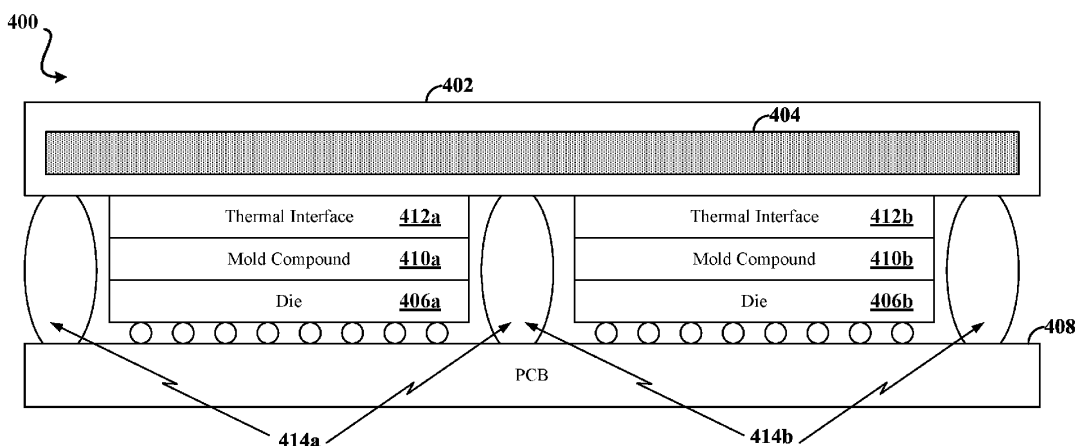


FIG. 4

(57) **Abstract:** Aspects of the disclosure relate to thermal management of devices, such as mobile devices configured for wireless communication in wireless communication networks. A device includes a plurality of electronic components. An electromagnetic interference (EMI) shield is disposed on the electronic components, and a plurality of EMI gaskets are disposed between the electronic components. Each of the EMI gaskets surrounds a respective one of the plurality of electronic components. An evaporative cooler device embedded within the EMI shield is configured to transfer heat away from at least a portion of the electronic components.

[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

(48) Date of publication of this corrected version:

30 December 2020 (30.12.2020)

(15) Information about Correction:

see Notice of 30 December 2020 (30.12.2020)