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(54) **ENVIRONMENTALLY HARDENED COLD
PLATE FOR USE IN LIQUID COOLING OF
ELECTRONIC DEVICES**

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(57) **ABSTRACT**

A cold plate assembly has a cold plate that is resistant to corrosion and particulate fouling, allowing direct use of facility-grade cooling liquid and omission of a secondary coolant loop that uses a purified liquid coolant. The cold plate has a surface configured with an array of extended fins coated with at least one of a hydrophobic, non-conductive, and/or anti-corrosive surface treatment. The coated extended fins provide heat transfer directly to the cooling liquid without requiring a secondary coolant loop and without causing corrosion or clogging due to facility liquid chemical contaminants or particulates. An encapsulating lid of the cold plate assembly attaches to a perimeter of the surface encompassing the array of extended fins to form a liquid cooling cavity. The encapsulating lid has input and output ports sealably connectable by an open-loop liquid distribution system, respectively, to a facility liquid supply and return.

