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Evaluation of Low Power Wi-Fi Modules in Simulated Ocean Environments

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Abstract : The major problem underwater acoustic communication faces is the low data rate due to low signal frequency. By contrast, the Wi-Fi communication protocol offers high throughput but limited operating range due to the attenuation effect of the sea and ocean medium. However, short-range near-field underwater wireless power transfer systems offer an environment where Wi-Fi communication can be effectively integrated to collect data and deliver instructions to sensors in underwater sensor networks. In this paper, low-power, low-cost off-the-shelf Wi-Fi modules are explored experimentally for four selected parameters for different distances between units and water salinities. The results reveal a shorter operating range and stronger dependence on water salinity than reported so far for high-end Wi-Fi modules.

Keywords : Wi-Fi, wireless power transfer, underwater communications, ESP
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